

CITY ENGINEER'S DEPARTMENT.

F. W. CAPPELEN,
City Engineer.

I. E. HOWE,
Ass't City Engineer.

STREET AND OFFICE DIVISION.

E. R. DUTTON,
Engineer.

W. M. FOX,
Ass't Engineer.

B. H. DURHAM,
Transitman.

W. F. DEALING,
Sidewalk Engineer.

R. L. COX,
Chief Clerk.

F. G. PARKHILL,
Bookkeeper.

NELLIE BURNS,
Stenographer.

Three Levelmen, five Rodmen, one Draughtsman, two Clerks.

WATER WORKS DIVISION.

W. W. REDFIELD,
Engineer.

G. BOGERT,
Draughtsman.

SEWER DIVISION.

CARL ILSTRUP,
Engineer.

R. J. STARK,
Bookkeeper.

W. E. STOOPS AND N. LUND,
Assistants.

T. DEACON,
Chief Inspector.

AUGUST RYDH AND STANLEY BEZOIER,
Timekeepers.

M. E. SLEEPER,
Street Foreman.

Two Levelmen, three Inspectors, one Draughtsman.

BRIDGE AND BUILDING DIVISION.

A. B. COE, *Ass't Engineer.*

One Levelman, one Draughtsman, one Rodman, one Inspector.

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HISTORICAL.

In 1838 Franklin Steele erected his claim shanty on the eastern shore of the Mississippi river opposite the falls of St. Anthony. Seven years latter, or in 1845, the first permanent house was erected in St. Anthony by Pierre Bottineau. The same year the city of St. Anthony was incorporated, and Hon. H. T. Welles elected the first mayor.

In 1849 the west shore of the Mississippi at the falls was a military reservation, and hence settlement was not permitted. But at the session of congress of that year two ex-soldiers of the Mexican war—Hon. Robert Smith, of Illinois, and Col. John H. Stevens—were, by special act, allowed to make settlement on the reserve, and the former located his claim so as to take in the falls, while the latter built his house on the hillside where the union station now stands, and near the spot where the western end of the suspension bridge was to terminate four or five years afterwards, and where the steel arch bridge is now located.

In 1854 the act was passed and became a law, throwing open to settlement the reservation west of the Mississippi river, and the "squatters, were allowed to purchase the lands upon which they had settled at the uniform government price of \$1.25 per acre. At the election that year seventy-five votes were cast, and the population was estimated at two hundred. In the fall of the same year the town was christened, the name "Minneapolis" having been suggested by Mr. Charles Hoag, a gentleman who lived to ripe old age in the vicinity of this city, dying in March, 1888.

In 1854 the city of Minneapolis (west division) was platted and before the close of that year boasted of a permanent population of 1,000 people. In 1857 the population had increased to about 2,000, and there was a tremendous rivalry between the two hamlets—St. Anthony and Minneapolis. In 1858 Minneapolis was vested with its first town or village government, but did not assume the responsibility of a full-grown municipality until 1867.

Minneapolis and St. Anthony were rivals for commercial and manufacturing supremacy for more than twenty years, but finally in 1873 joined their fortunes under one name and one municipal government, and have since been known to the world as the progressive city of Minneapolis, with an area of 53 square miles, or 33,920 acres, and with a population in 1895 of 193,833.

SUMMARY CITY OFFICERS, 1881 to 1896.

OFFICERS.	Elected April 5, 1881—Roman. Hold overs in <i>Italics.</i>	Elected April 4, 1882—Roman. Hold overs in <i>Italics.</i>	Elected April 3, 1883—Roman. Hold overs in <i>Italics.</i>	Elected April 1, 1884—Roman. Hold overs in <i>Italics.</i>
Mayor.....	A. C. Rand.....	A. A. Ames.....	A. A. Ames.....	Geo. A. Pillsbury.
Comptroller.....	Wm. B. Hill.....	Wm. B. Hill.....	Wm. B. Hill.....	Sam. Goodnow.
City Treasurer.....	T. J. Buxton.....	T. J. Buxton.....	T. J. Buxton.....	T. J. Buxton.
{ City Clerk.....	Selah Mathews.....	Selah Mathews.....	Selah Mathews.....	Selah Mathews.
{ City Attorney.....	R. C. Benton.....	C. H. Benton.....	C. H. Benton.....	Iudson N. Cross.
{ City Engineer.....	Andrew Rinker.....	Andrew Rinker.....	Andrew Rinker.....	Andrew Rinker.
Ald. 1st ward.....	M. W. Glenn.....	Anton Grethen.....	B. F. Nelson.....	M. W. Glenn.
	Anton Grethen.....	B. F. Nelson.....	M. W. Glenn.....	E. F. Comstock.
Ald. 2d ward.....	B. F. Nelson.....	M. W. Glenn.....	E. F. Comstock.....	John Fleetham.
	J. H. Gilmore.....	W. M. Barrows.....	T. F. Andrews.....	C. A. Coe.
	W. M. Barrows.....	T. F. Andrews.....	C. A. Coe.....	E. M. Johnson.
Ald. 3d ward.....	T. F. Andrews.....	C. A. Coe.....	E. M. Johnson.....	F. C. Barrows.
	J. W. Anderson.....	Mathias Kees.....	Daniel Waitt.....	E. Eichhorn.
	Mathias Kees.....	Daniel Waitt.....	E. Eichhorn.....	Chas. Hashow.
Ald. 4th ward.....	Daniel Waitt.....	E. Eichhorn.....	Chas. Hashow.....	Robert Pratt.
	Frank Beebe.....	F. S. Gilson.....	G. S. Cleveland.....	H. C. Morse.
	F. S. Gilson.....	G. S. Cleveland.....	H. C. Morse.....	†F. L. Greenleaf.
	G. S. Cleveland.....	Henry C. Morse.....	F. L. Greenleaf.....	†Emerson Cole.
Ald. 5th ward.....	J. M. Parker.....	Fred L. Smith.....	C. W. Clark.....	William W. Sly.
	Fred L. Smith.....	C. W. Clark.....	Jas. M. Parker.....	†S. C. Cutter.
	C. W. Clark.....	Jas. M. Parker.....	*G. A. Pillsbury.....	Jas. M. Parker.
Ald. 6th ward.....	Joseph Holscher.....	Matt Walsh.....	A. C. Haugan.....	C. W. Clark.
	Matt Walsh.....	A. C. Haugan.....	Joseph Holscher.....	Joseph Holscher.
	A. C. Haugan.....	Jos. Holscher.....	Matthew Walsh.....	Matthew Walsh.
Ald. 7th ward.....			N. H. Roberts (2).....	A. C. Haugan.
			A. Noerenberg (3).....	N. H. Roberts.
Ald. 8th ward.....				A. J. Noerenberg.
			S. P. Channel (2).....	§S. P. Channel.
Ald. 9th ward.....			A. Lawrence (3).....	||Geo. W. Cooley.
				Albert Lawrence.
Ald. 10th ward.....				
Ald. 11th ward.....				
Ald. 12th ward.....				
Ald. 13th ward.....				

SUMMARY CITY OFFICERS, 1881 TO 1896.—Continued.

Elected April 7, 1885—Roman. Hold overs in <i>Italics.</i>	Elected April 6, 1886—Roman. Hold overs in <i>Italics.</i>	Elected April 5, 1887—Roman. Hold overs in <i>Italics.</i>	Elected Nov. 6, 1888—Roman.	Elected Nov. 4, 1890—Roman. Hold overs in <i>Italics.</i>
Geo. A. Pillsbury...	A. A. Ames.....	A. A. Ames.....	E. C. Babb.....	Philip B. Winston
Sam. Goodnow.....	F. G. Holbrook...	F. G. Holbrook...	John F. Calderw'd	Solon Armstrong
E. H. Moulton.....	E. H. Moulton...	E. H. Moulton...	E. H. Moulton....	Kris'n Kortga'rd
Selah Mathews.....	Selah Mathews...	C. A. Cornman...	CHAS. F. HANEY..	CHAS. F. HANEY.
Judson N. Cross....	Judson N. Cross..	Seagrave Smith..	ROBT. D. RUSSELL	ROBT. D. RUSSELL
Andrew Rinker.....	Andrew Rinker...	Andrew Rinker...	ANDREW RINKER.	ANDREW RINKER.
E. F. Comstock....	John Fleetham....	Titus Mareck.....	J. T. McGowan(4)	Jos. Ingenhutt(4)
John Fleetham.....	Titus Mareck.....	E. J. L'Herault...	J. Ingenhutt (2)...	J. T. McGowan.
Titus Mareck.....	E. J. L'Herault...	C. A. Hanscom...	F. Brueshaber, Jr 2	
E. M. Johnson.....	F. C. Barrows....	D. M. Clough....	E. M. Johnson(4)	Jas. C. Haynes (4)
F. C. Barrows....	D. M. Clough....	E. M. Johnson...	F. C. Barrows (2)	F. C. Barrows(2)
D. M. Clough.....	E. M. Johnson...	F. C. Barrows....	V. M. Smith (2)..	
Chas. Hashow.....	Robert Pratt.....	W. H. Mills.....	G. A. Durnam (4).	Jos. L. Kiichli (4)
Robert Pratt.....	E. Eichhorn (a)...	John A. Gilman...	C. P. Enstad (2)..	Geo. A. Durnam.
E. Eichhorn.....	W. H. Mills.....	Wm. McArdle....	J. A. Gilman (2)..	
Emerson Cole.....	W. W. Sly.....	H. C. Morse.....	E. G. Potter (4)..	E. G. Potter.
W. W. Sly.....	H. C. Morse.....	B. Cloutier.....	Emerson Cole (2)	Sam'l B. Loye(4)
H. C. Morse.....	B. Cloutier.....	Emerson Cole.....	S. B. Loye (2)....	
S. C. Cutter.....	C. W. Clark.....	Thos. Downs.....	C. P. Lovell (4)..	Chas. P. Lovell.
C. W. Clark.....	Thos. Downs.....	Alonzo Phillips...	H. W. Brazie (4)	H. W. Brazie (4)
Thomas Downs....	Alonzo Phillips...	C. W. Clark.....	Thos. Downs (2).	Thos. Downs (2)
Matthew Walsh....	A. C. Haugan.....	Jacob Stoft.....	Sam'l Hunter (2)	Sam'l Hunter.
A. C. Haugan.....	L. Swenson (b)...	J. M. Gleason....	C. Ellingsen (2)..	Lars M. Rand(4)
Lars Swenson.....	Jacob Stoft.....	Clar. Johnson....	J. A. Swanson (2)	
A. J. Noerenberg...	Phineas Phelps...	E. T. Gibson.....	J. H. Parry (4)..	J. H. Parry.
Phin's Phelps (2)..	E. T. Gibson.....	Thos. P. Dwyer...	J. M. Meloy (2)..	M. B. Rollins (4d)
E. T. Gibson (3)..	Thos. P. Dwyer...	A. J. Noerenberg.	Ole P. Flaten (2).	
A. Lawrence.....	E. C. Babb.....	Geo. W. Cooley..	Melvin Grimes (4)	Melvin Grimes.
E. C. Babb (2)....	Geo. W. Cooley...	A. Lawrence.....	J. C. Sterling (2)	G. W. Flanders(4)
G. W. Cooley (3)..	A. Lawrence.....	O. A. Stoneman...	D. G. Thomps'n(c2	
.....	.....	Robert Ervin....	J. H. Bradish (4)	J. H. Bradish.
.....	.....	John Kerr.....	Erik Rhode (2)...	J. J. McGuire (4)
.....	.....	Herman Vogt....	Herman Vogt (2)	
.....	.....	Vincent Reeves...	Vincent Reeves(4)	Vincent Reeves.
.....	.....	Henry Oswald....	W. J. Bursell (2)..	F. A. Schwartz(4)
.....	.....	.....	B. H. Billings (2)	
.....	.....	Lars Swenson....	J. A. Blichfeldt(4)	J. A. Blichfeldt.
.....	.....	J. D. Muldoon...	J. W. Phillips (2).	Wm. H. Lackey(4)
.....	.....	J. L. Johnson....	O. A. Fultz (2)...	
.....	.....	Caleb Tingley...	W. B. Wood'rd (d2	W. B. Wood'd (d)
.....	.....	J. L. Parker.....	J. E. Vandew'ler (2)	Geo. Peterson(4)
.....	.....	.....	A. S. Adams (2)..	
.....	.....	C. C. Garvey.....	D. D. Farnsw'rh (4	D. D. Farnsworth
.....	.....	A. F. Nichols.....	G. H. Warren (2)	
.....	.....	.....	J. S. Gray (2)....	J. S. Gray (4).

* Elected Mayor April 1, 1884; resigned as alderman of Fifth ward April 2, 1884.

† Resigned Feb. 25, 1884. ‡ Elected March 15, 1884. § Resigned Feb. 27, 1884.

|| Elected March 15, 1884. ¶ Elected at special election held April 19, 1884, to fill vacancy occasioned by the resignation of Geo. A. Pillsbury.

(a) Resigned March 10, 1887, to take effect March 25, 1887. (b) By act of legislature transferred to Eleventh ward for the unexpired part of his term. (c) Died Aug. 18, 1889, and Dr. F. E. Hansen elected Sept. 10, 1889, to fill the unexpired term of D. G. Thompson. (d) By act of legislature changing boundary lines of the Seventh and Twelfth wards, Wm. B. Woodward was made to represent the Seventh ward and M. B. Rollins to represent the Twelfth ward.

Figures in parentheses, after names, thus (2), denotes the number of years in term. By an act of legislature the term of all city officers holding over, and all those elected April 5, 1887, expired on the first Monday in January, 1889. Terms of all officers elected Nov. 6, 1878, to commence on the first Monday in January, 1889.

City Clerk, City Engineer and City Attorney are appointed by the City Council for two years.

SUMMARY CITY OFFICERS, 1881 to 1886.—Continued.

OFFICERS.	Elected Nov. 8, 1892— Roman. Hold overs in <i>Italics.</i>	Elected Nov. 6, 1894— Roman. Hold overs in <i>Italics.</i>
Mayor.....	William H. Eustis.....	Robert Pratt.
Comptroller.....	Wallace G. Nye.....	Wallace G. Nye.
City Treasurer.....	A. C. Haugan.....	A. C. Haugan.
{ City Clerk.....	Chas. F. Haney.....	Chas. F. Haney.
{ City Attorney.....	David F. Simpson.....	David F. Simpson.
{ City Engineer.....	F. W. Cappelen.....	F. W. Cappelen.
Ald. 1st ward.....	Perry A. Long (4).....	Roman Alexander (4).
	<i>Jos. Ingenhutt</i> (2).....	<i>Perry A. Long</i> (2).
Ald. 2d ward.....	Fred B. Snyder (4).....	Burke F. O'Brien (4).
	<i>Jas. C. Haynes</i> (2).....	<i>Fred B. Snyder</i> (2).
Ald. 3d ward.....	Hugh Jennings (4).....	Geo. A. Durnam (4).
	<i>Jos. L. Kiichli</i> (2).....	<i>Hugh Jennings</i> (2).
Ald. 4th ward.....	Sam E. Adams (4).....	S. B. Loye (4).
	<i>S. B. Loye</i> (2).....	<i>Sam E. Adams</i> (2).
Ald. 5th ward.....	F. C. Harvey (4).....	Wyman Elliot (4).
	<i>H. W. Brazie</i> (2).....	<i>F. C. Harvey</i> (2).
Ald. 6th ward.....	Andrew Anderson (4).....	Lars M. Rand (4).
	<i>Lars M. Rand</i> (2).....	<i>Andrew Anderson</i> (2).
Ald. 7th ward.....	J. A. Nordeen (4).....	Norman I. Colburn (4).
	<i>W. B. Woodward</i> (2).....	<i>J. A. Nordeen</i> (2).
Ald. 8th ward.....	Julius E. Miner (4).....	Seth M. Hewett (4).
	<i>Geo. W. Flanders</i> (2).....	<i>Julius E. Miner</i> (2).
Ald. 9th ward.....	Jas. H. Bradish (4).....	Erik Rhode (4).
	<i>John J. McGuire</i> (2).....	<i>Jas. H. Bradish</i> (2).
Ald. 10th ward.....	P. W. McAllister (4).....	Fred A. Schwartz (4).
	<i>Fred A. Schwartz</i> (2).....	<i>P. W. McAllister</i> (2).
Ald. 11th ward.....	A. L. Skoog (4).....	J. W. Phillips (4).
	<i>Wm. H. Lackey</i> (2).....	<i>A. L. Skoog</i> (2).
Ald. 12th ward.....	M. B. Rollins (2).....	Francis G. Drew (4).
	<i>Geo. Peterson</i> (2).....	<i>Chas. E. Dickinson</i> (2).
Ald. 13th ward.....	Albert Currier (4).....	G. L. Fort (4).
	<i>James S. Gray</i> (2).....	<i>Albert Currier</i> (2).

ELECTION OF ALDERMEN.

AN ACT, to amend Section One, Chapter Two of the Charter of the City of Minneapolis, enacted by the Legislature of the State of Minnesota, and approved April 3d, A. D. 1889.

SECTION 1. The elective officers of the City of Minneapolis shall be a mayor, a treasurer, a comptroller, members of the City Council and the members of such other boards as this charter shall create and declare to be elective officers of the city.

The City Council shall consist of three (3) aldermen from each ward in the city until the first (1st) Monday in January, one thousand eight hundred and ninety-one (1891), and thereafter shall consist of two (2) aldermen from each ward, to be elected by the qualified voters in their respective wards.

The aldermen shall each hold office for the term of four (4) years from and after the first (1st) Monday in January next following his election, *provided* that the aldermen who were elected at the general election held in November, one thousand eight hundred and eighty-eight (1888) and qualified under such election, shall continue in office until the expiration of the term for which they were elected.

At the general election to be held in November, one thousand eight hundred and ninety (1890), and at each general election held every two years thereafter, there shall be elected one (1) alderman from each ward, to serve for the term of four (4) years from the first (1st) Monday in January next following his election.

STREET COMMISSIONERS.

<i>First Ward,</i>	- - - - -	PETER RUSSELL
<i>Second Ward,</i>	- - - - -	T. D. ARMSTRONG
<i>Third Ward,</i>	- - - - -	CHARLES WALLIN
<i>Fourth Ward,</i>	- - - - -	F. C. DETERLY
<i>Fifth Ward,</i>	- - - - -	J. M. COLE
<i>Sixth Ward,</i>	- - - - -	JOHN A. HAGMAN
<i>Seventh Ward,</i>	- - - - -	GEORGE MICHIE
<i>Eighth Ward,</i>	- - - - -	JOHN F. PERRY
<i>Ninth Ward,</i>	- - - - -	C. H. TAYLOR
<i>Tenth Ward,</i>	- - - - -	JOHN SIMONSON
<i>Eleventh Ward,</i>	- - - - -	P. J. EDQUIST
<i>Twelfth Ward,</i>	- - - - -	E. O. PARKER
<i>Thirteenth Ward,</i>	- - - - -	HENRY W. WEBER

The Street Commissioners are appointed by the City Council for a term of one year.

STANDING COMMITTEES OF THE CITY COUNCIL.**1895-1896.**

Ways and Means—Harvey, Adams, Colburn, Hewitt, Bradish.
Salaries—Schwartz, Currier, Elliot, Alexander, Loye.
Claims—O'Brien, Adams, Harvey, Miner, Dickinson.
Taxes—Skoog, Miner, Elliot, Dickinson, Fort.
Licenses—McAllister, Long, Alexander, Rhode, Fort.
Bonds of City Officers—Long, Rand, Schwartz, Phillips, Currier.
Accounts of City Officers—Anderson, Long, Jennings, Rand, Schwartz.
Public Grounds and Buildings—Elliot, Alexander, Nordeen, Hewett, Phillips.
Roads and Bridges—Loye, Durnam, Hewett, Bradish, Drew.
Street Grades and Additions—Rhode, Anderson, Skoog, Phillips, Currier.
Fire Department—Nordeen, O'Brien, Harvey,* Drew, Rhode.
Waterworks—Adams, Harvey, Rhode, O'Brien, Colburn.
Gas—Drew, Dickinson, Elliot, Jennings, Colburn.
Sewers—Miner, Skoog, Nordeen, Alexander, Loye.
Markets—Elliot, Adams, Long, Rand, McAllister.
Printing—Dickinson, Drew, Currier, Durnam, Schwartz.
Railroads—Hewett, Harvey, Alexander, Nordeen, Dickinson.
Police—Alexander, Skoog, Jennings, Miner, Rhode.
Paving—Durnam, Elliot, O'Brien, Fort, Hewett.
Underground Wires—Phillips, Nordeen, Adams, Loye, McAllister.
Health and Hospitals—Colburn, Fort, Drew.
Cancellation—Jennings, Anderson, Durnam.
Ordinances—Fort, Bradish, Miner.
Bethany Home—Currier, Skoog, Anderson.
Rules—Rand, Loye, McAllister.

*Ald. Phillips appointed member of Committee on Fire Department, Jan. 10th, 1896—Ald. Harvey resigned.

SALARIES—Continued.

	Per Annum.		Per Annum.
Telephone Operators, night.....	\$ 720.00	Clerk, per month.....	\$ 65.00
Telephone Operators, day.....	600.00	Timekeeper, per month.....	65.00
POLICE DEPARTMENT.		Two Inspectors, each, per month.....	65.00
Superintendent of Police.....	\$3,300.00	Street Foreman.....	1,150.00
Captains, each.....	1,200.00	Assistant Street Foreman.....	720.00
Lieutenants, each.....	1,080.00	Clerk, per month.....	65.00
Sergeants, each.....	960.00	Flushers, each, per month.....	55.00
Secretary.....	1,100.00	Blacksmith.....	840.00
Assistant Secretary.....	600.00	Plumber, per month.....	80.00
Inspectors, each.....	1,100.00	Plumber's Helper, per month.....	45.00
Patrolmen, each.....	840.00	Engineer, Station No. 1 (Buswell).....	1,140.00
Mounted Patrolmen, each.....	1,020.00	Oilers, Station No. 1, per month.....	65.00
Telephone Operators, each.....	960.00	Engineer, Station No. 2 (Lovejoy).....	1,020.00
Janitor, Municipal Court.....	600.00	Oilers, Station No. 2, each, per month.....	65.00
Municipal Court Officers, each.....	960.00	Engineer in charge of Stations (Bergstrom).....	1,675.00
WATER WORKS DEPARTMENT.		Engineer, Station No. 3 (Cowan).....	1,350.00
Registrar.....	\$2,000.00	Engineer, Station No. 3 (Fairweather).....	1,140.00
Cashier.....	1,150.00	Engineer, Station No. 3 (Moore).....	1,140.00
Bookkeeper.....	840.00	Engineer, Station No. 3 (Hoar).....	1,020.00
Clerks, each, per month.....	65.00	Oilers, Station No. 3, each, per month.....	65.00
Two Inspectors, each, per month.....	75.00	Firemen, each, per month.....	65.00
One Inspector, per month.....	65.00	Coal Passers, each, per month.....	50.00
Civil Engineer.....	1,350.00	One Parkman, per month.....	60.00
Draughtsman, per month.....	65.00	One Helper, per month.....	50.00
Supervisor.....	1,200.00		

SALARIES FIXED BY THE LEGISLATURE.

	Per Annum.
Mayor.....	\$2,000.00
Aldermen.....	500.00
City Clerk.....	3,100.00
Municipal Judges.....	3,000.00
Clerk Municipal Court.....	1,800.00
Deputy Clerks Municipal Court.....	\$1,500.00 and 1,000.00
Stenographers Municipal Court.....	1,500.00

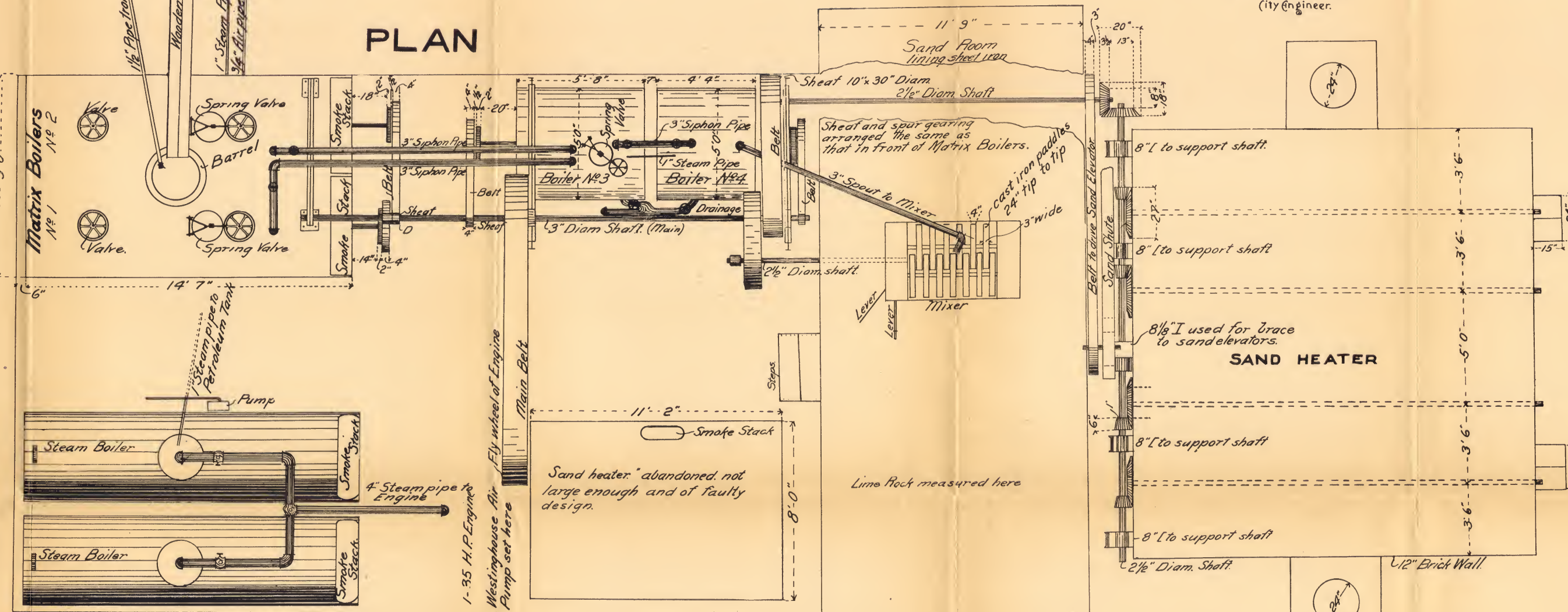
PORTABLE ASPHALT PLANT

USED BY
AMERICAN ASPHALT CO.,

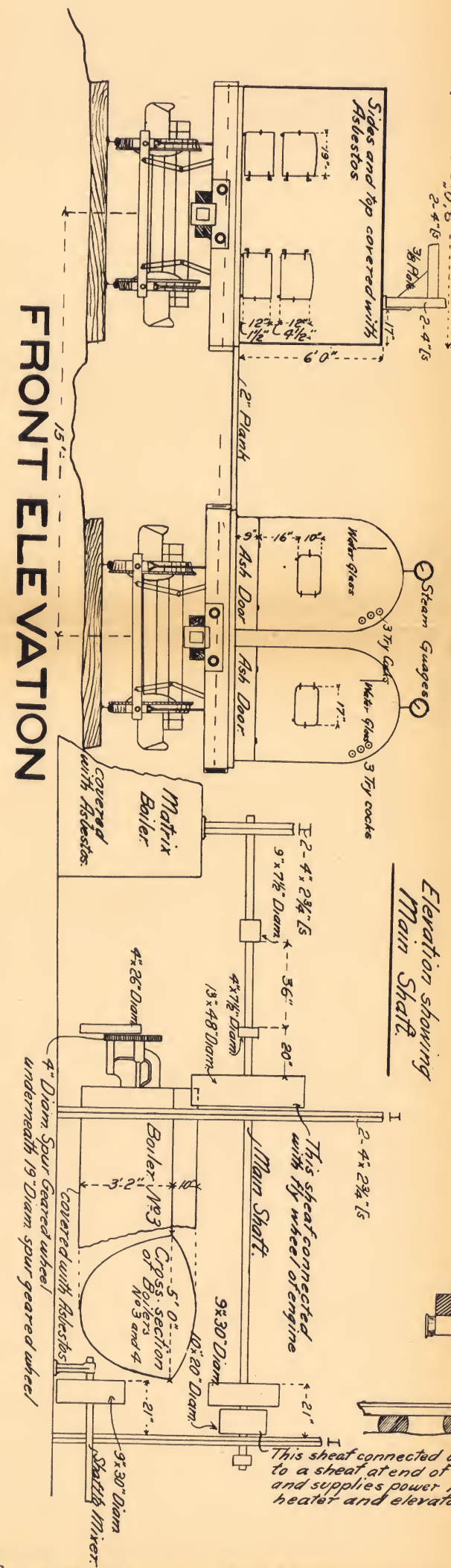
1/4 inch Scale.

F. W. CAPPELEN,
(City Engineer.)

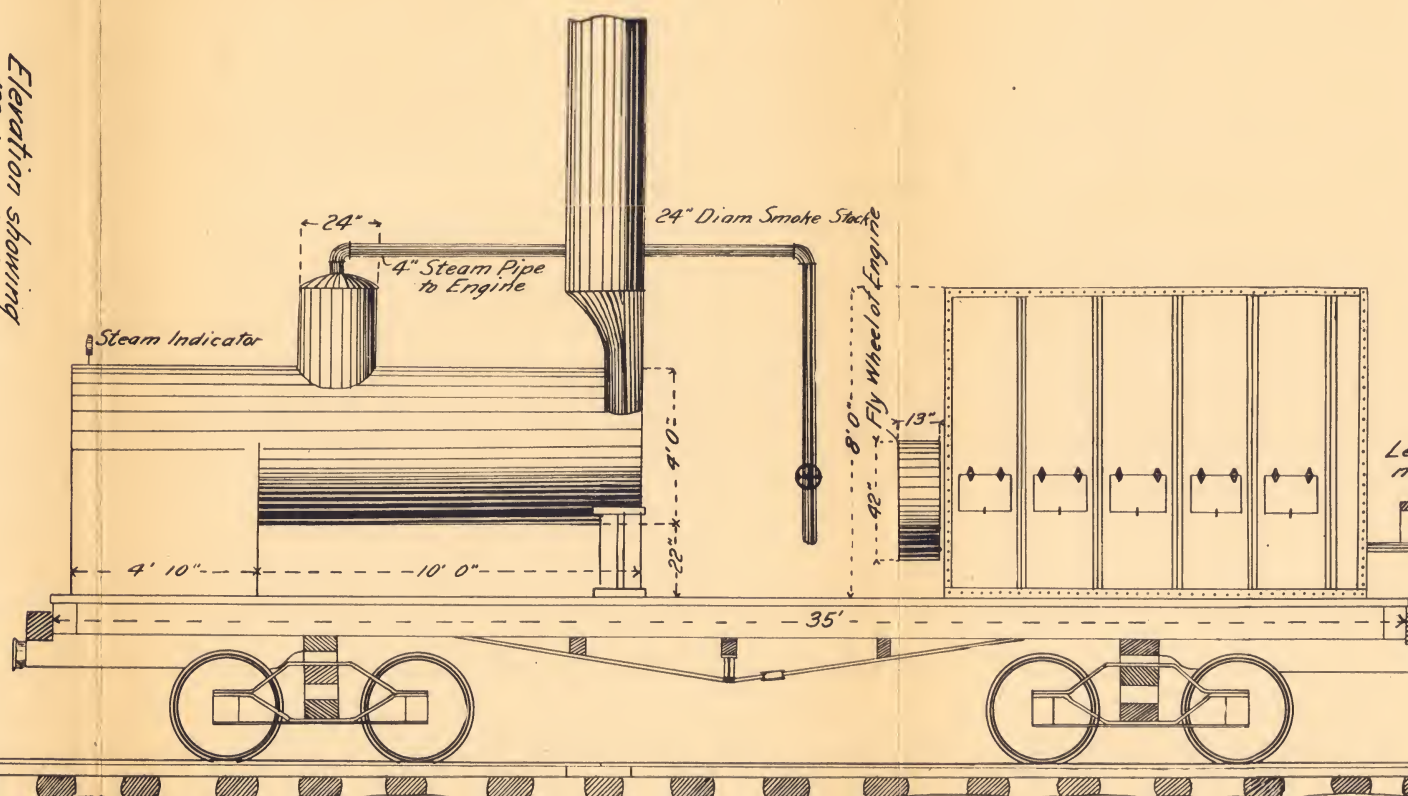
PLAN



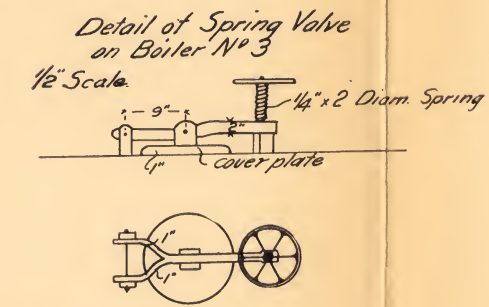
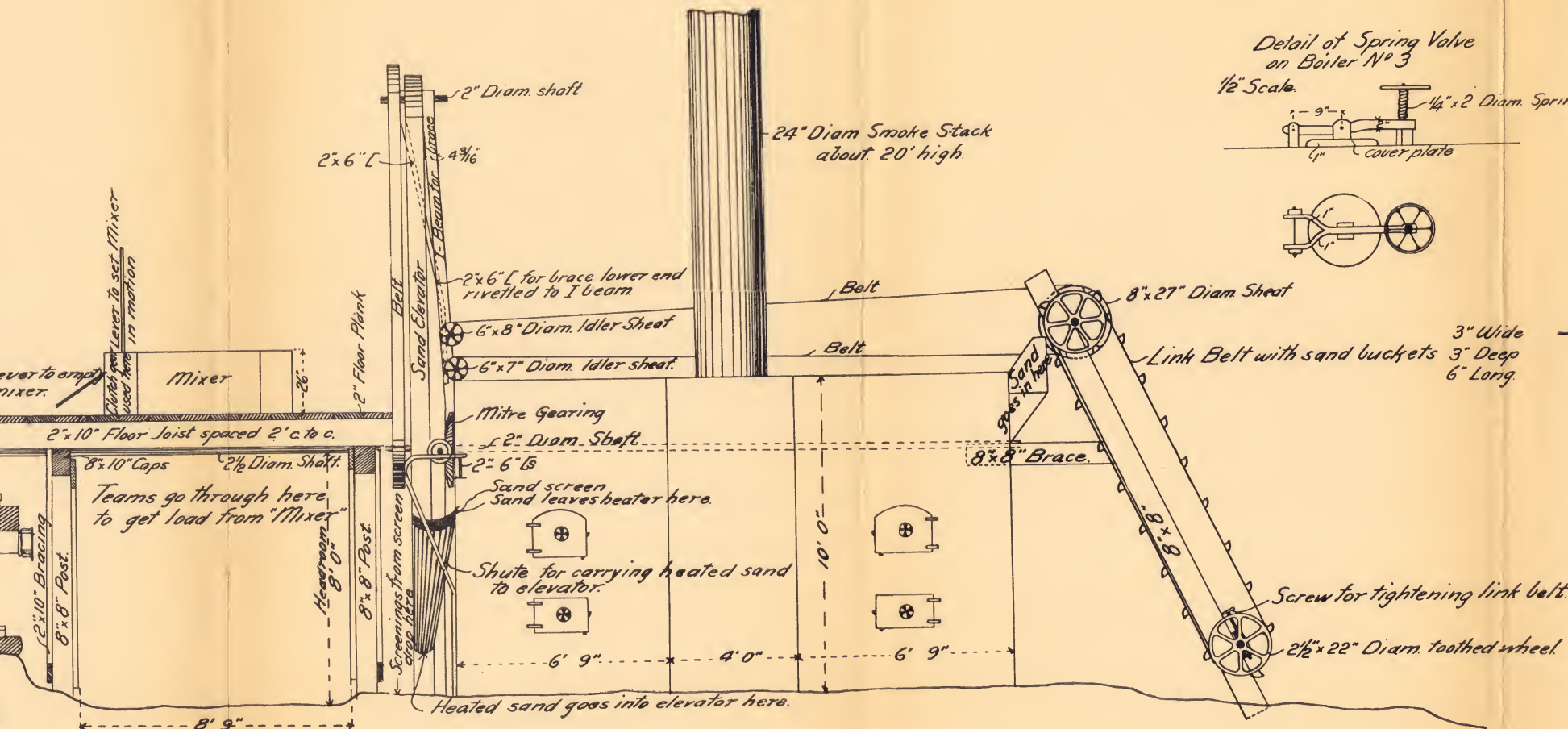
FRONT ELEVATION



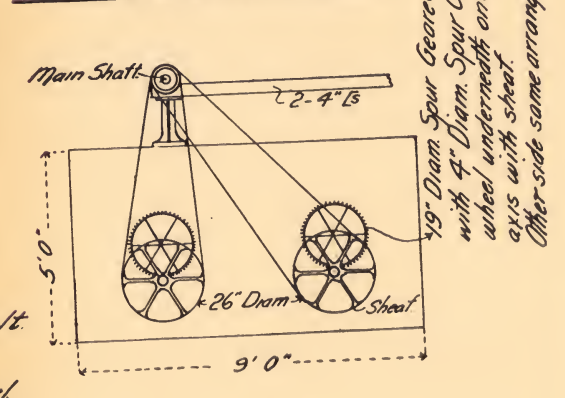
Elevation showing Main Shaft



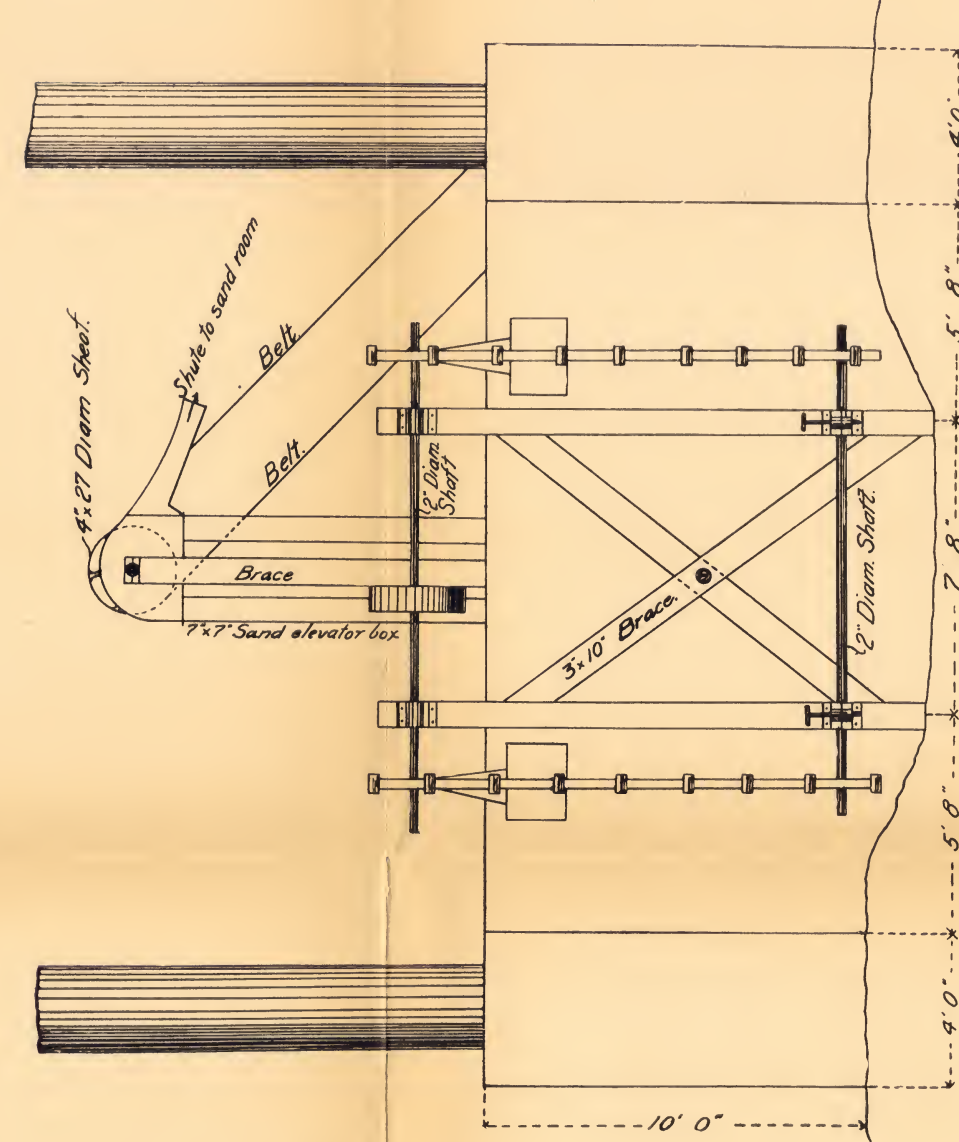
SIDE ELEVATION



Elevation at end of Matrix Boilers.



END ELEVATION



CITY ENGINEER'S REPORT.

MINNEAPOLIS, January 1, 1896.

To the Honorable City Council:

GENTLEMEN:—I have the honor to herewith submit my report upon work done under my direction for the year 1895. In connection with the tabulated statements for all work done, I beg to submit a few remarks and recommendations with reference to the various departments. A rather detailed report is submitted pertaining to the new reservoir now under construction, partly because it is an unusually large undertaking, and partly because the work, as practically all other city work, is being done by day labor.

PAVING.

Very little paving was done during this season, only about 10,000 square yards of cedar, 20,000 yards of asphalt, and some granite and brick was put down, as compared to 110,000 yards of cedar and 10,000 yards of asphalt in 1894. One thing was, however, accomplished, to-wit: the repaving of our principal thoroughfare, Nicollet avenue, from Washington avenue to Tenth street. For the last two years the repaving of this street was a bone of contention. The property owners interested were requested to express their preference for any kind of paving they might wish, and during the controversy, majority petitions for all kinds of pavement were presented, and, finally, the street was ordered paved with Utah Wasatch Limerock Asphalt, under a ten year guaranty.

As this material is entirely new in this locality, in fact Minneapolis being the first city east of the Rocky mountains to try it, it might be desirable to state how this was brought about.

During the month of March, 1895, the paving committee and other city officials, with myself, were invited by the American Asphalt Company, of Columbus, Ohio, to go to Salt Lake City, Utah, to inspect several streets paved with the so-called Utah Limerock Asphalt. The trip was made and certainly as fine asphalt streets were found as any where, and as a general proposition, better. Samples were cut out of the streets that were from three to four years old, and showing very good composition and full of "life," using an asphalt expression.

Heretofore, in Minneapolis, the specifications only permitted the so called Trinidad Pitch Lake asphalt, and the first step in the right direction was taken in making the specifications broad enough to let any asphalt company bid that could give proper reference, both to material and financial standing, and give the required guaranty under the proper bond.

The Utah asphalt was accordingly permitted in the specifications under this additional safe-guard—that the pavement should be hard enough so as not to pluck out in the summer, and soft enough so as not to crack in the winter. So severe a demand has never been insisted upon from any other kind of asphalt, and bids could probably not be obtained from Trinidad or Bermudez under such specifications.

Bids were received for the paving of Nicollet avenue, for the following various kinds of pavement, at the accompanying lowest and highest prices:

KINDS OF PAVEMENT.	Low'st price per sq. yd.	Highest price per sq. yd.	Name of bidder.
Cedar block on 6-inch concrete foundation and tar filler	\$1.23	....	Hasel M. Smith.
Cedar block on 6-inch concrete foundation and tar filler .....	.....	\$1 27	Minneapolis. M. C. Burke, W. Superior.
Dressed granite, pein hammered, 5 cuts per inch, on 6-inch concrete, asphalt filler.....	2.97	.....	Hasel M. Smith.
Dressed granite, pein hammered, 5 cuts per inch, on 6-inch concrete, asphalt filler.....	.....	3.25	Canney Bros., Minneapolis.
Kettle river sandstone on 6-inch concrete, tar filter ..	.....	2.55	Canney Bros.
Kettle river sandstone on 6-inch concrete, tar filter. (Murphy grout).....	2.48	.....	Canney Bros.
Vitrified brick on 6-inch concrete; *10-year guaranty.	1.98	.....	M. C. Burke.
Vitrified brick on 6-inch concrete; *10-year guaranty.	.....	2.48	Hasel M. Smith.
Wasatch, Utah, Limerock asphalt, compressed from 3½-inch to 2½-inch on 6-inch concrete foundation; *10-year guaranty	2.49	.....	American Asphlt Company, Col- umbus, Ohio.
Trinidad pitch lake asphalt, 1-inch binder and 2 inch wearing surface, 6-inch concrete; *10-year guaranty.	2.15	.....	Warren-Scharf Asphalt Paving Company.

*Ten per cent of the contract price to be retained, in addition to proper surety bond the city paying 4 per cent interest on the retained money.

The asphalt bids showed quite a reduction in prices from former years. Two contracts had previously been made for \$2.75 per square yard on a five year guaranty, and one, in 1894, on Hennepin avenue, paralleling Nicollet avenue, for \$2.83 under a ten year guaranty. The contractors had to wait eight months for their pay. This last pavement was of Trinidad asphalt, and was laid on Hennepin avenue during October and November, 1894.

I refused, however, to accept the same, because it showed material defects only a short time after its completion. As this pavement was certainly a failure, and as the other asphalt streets built by the same company (The Warren-Scharf Company) had cracked very badly indeed, the contract for Nicollet avenue was awarded to the American Asphalt Company, using the Utah Rock asphalt, at the price of \$2.49 per square yard. About one-half of Hennepin avenue had to be resurfaced in the early summer, and parts of the resurfaced portion above referred to were again repaired later in the season, and since then many defects have appeared which will have to be repaired next spring.

The contractors for Nicollet avenue were rather slow in completing the contract, owing to the fact that the company did not build a permanent plant here, but shipped one in, built on two flat cars,

and when the plant finally got here, the patent sand dryers did not work, and other of the ordinary patterns had to be built on the ground. Owing to this delay, the six inch concrete foundation on Nicollet avenue, where Mankato, Minnesota, cement was used, was subjected to a very severe test, as follows:

To protect the concrete and still keep up the travel, the contractors covered the concrete with old plank. This, however, became such a nuisance that I ordered the planks removed, and let the full travel of more than 4,620 vehicles per day use the concrete for nearly three weeks with but very little effect on the same. See accompanying table for details as to the tonnage, etc., as per census taken in December, during the week from the 16th to the 22d.

The accompanying plan shows the arrangement of the temporary asphalt plant. The asphalt was made of the following proportions:

About 14 per cent.	residuum oil,
54	" Pittsburgh flux,
32	" pure asphaltum gum

100	"	formed the matrix of which about 105 lbs were mixed with 150 lbs. of pulverized Wasatch Limerock asphalt and 745 lbs. of sand. The oil was heated to about 270 degrees, the gum then added and heated to 415 degrees for about eight hours. The sand was heated to 450 degrees and the Wasatch was added cold to sand before matrix was added. The average temperature of the mixture on the street was 340 degrees.
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The surface, particularly in the first block, was rather wavy, owing to the difficulty of compressing $3\frac{1}{2}$ inches to $2\frac{1}{2}$ inches, all in one coat and with a five ton roller. It might be advisable, in case more of the pavement is laid here, to use both a five ton and a ten ton roller to get perfect compression.

As far as can be judged at the present time, the work shows up very well, but an opinion as to how it will stand the rest of our severe winter, can only be conjectured.* A penalty of \$1,020.00, for delay was deducted from the contract price.

Heretofore the asphalt pavements were not satisfactorily cleaned, but by adopting the so called "Boss Scraper" (a cut of same is herewith presented) Hennepin and Nicollet avenues were kept in excellent condition, with one exception, that the streets were kept a little too wet, by not having the proper sprinklers; that is to say, our present sprinklers throw too much water for an asphalt pavement, and I would suggest that the sprinkler be changed to throw only a spray.

The scraper is really nothing but a large dust pan on two wheels so that it can be easily run and turned in any direction. The operator pushes it along the paving, the sharp edge of the scraper catching the dirt, which is, with the assistance of the operator's broom, pushed into the pan and removed to the curb line, from where it is hauled away. The price of this scraper is \$6.00, including broom. When the steel edge wears off, it is renewed.

*Jan. 1st to 2d, the cold wave of -20° Fahrenheit caused cracks to appear in Nicollet avenue pavement as well as on Hennepin.

Before day break, the asphalt on Hennepin and Nicollet avenues was washed by fire hose attached to the hydrants. The cost of washing the 32,455 square yards per morning was [four men three hours at 15 cents per hour] a total of \$1.80. It required three men to care for Hennepin avenue, with 9,756 yards asphalt and 2,975 yards granite, and five men on Nicollet avenue, with 19,442 yards of asphalt, and 282 yards of granite, or one man could care for 4,244 square yards on Hennepin and one man could care for 3,946 square yards on Nicollet. The difference in the first place is due to the fact that the granite part on Hennepin avenue is between car tracks, and as the total width of the roadway is 64 feet, the granite part is only a little travelled. The travel on Nicollet avenue is considerably more than on Hennepin avenue. The cost per square yard per day on Hennepin avenue would be:

Hand cleaning.....	0.035 cents
Washing.....	0.0055 cents
For hauling away dirt.....	0.02 cents

0.0605

Or per month per yard 1.815 cents

The cost per square yard per day on Nicollet avenue would be:

Hand cleaning.....	0.038 cents
Washing.....	0.0056 cents
For hauling away dirt.....	0.0203 cents

0.0639 cents

Or per month per yard 1.917 cents

The item of removing the gathered refuse, which consists mostly of horse droppings, is too high, and I expect that before long this refuse will be removed by interested parties free of cost to the city for the benefit that may be reaped from said refuse as a fertilizer. It is clear that it cost considerable to keep streets clean, that is to say, absolutely clean, and as it is a popular claim that asphalt streets are always dirty and dusty to excess, I thought it advisable to demonstrate that by proper methods such trouble would be overcome, and it is fair to state that Hennepin Avenue and Nicollet Avenue were kept in beautiful condition from May to November. Due credit must be given to Mr. Deterly, Street Commissioner of the Fourth Ward, who worked in perfect harmony with this office, and under whose personal charge the work was done.

The property owners could materially assist in keeping the streets in good order and lessen the cost of cleaning, by desisting from sweeping papers, etc., from their stores on to the street whenever they can do so unnoticed. Receptacles for waste paper have been placed at convenient places by the Street Commissioner, in an attempt to educate the public to use them in place of the street.

BRICK PAVEMENTS.

Efforts were made by the Council Committee on Paving to have at least one street of vitrified brick put down, and finally the block between Second Avenue and Third Avenue South, on Washington Avenue, was selected. South of Third Avenue the street is paved with granite, and north, with cedar, which was put down in 1882, (the

MAN WITH SHovel AND BARREL



first year that pavement of any kind was laid in Minneapolis,) and of course is in miserable condition and is unfit for travel. The property owners affected by the proposed sample brick pavement, at once objected, and petitioned the City Council not to disturb the cedar as it was good enough. The committee promptly denied the petition, but after all the brick was not put down.

During the early part of November, a majority of the City Council and city officials accepted an invitation from the Brick Makers' Association of Des Moines, Iowa, to visit that city and inspect the brick pavements of which there are about sixty miles, as well as the several brickmaker's establishments. Most of the streets were in good condition, showing that the Des Moines brick certainly answered the purpose for street pavements for the city of Des Moines. The cost per square yard being about \$1.19 to \$1.30, depending on character of construction, either two course brick work or concrete and single brick. The very best freight rate would add for Minneapolis, at 65 brick per yard, 40 cents for freight, or a total of \$1.70 per yard here, without profit on the brick to middlemen handling the same.

Later, during the month of November, I had occasion to pave a strip 60 feet in length on Bridge Square, over the Great Northern Railway Company's tracks, on a foundation consisting of buckle plates with concrete covering, and suggested brick, as the travel is quite heavy and no property owners were affected. The work was ordered done by me, and I accordingly put down four different kinds of brick, viz: Anderson & Barr Clay Company's brick from Streator, Ill., price per thousand, \$14.00 F. O. B. cars, Minneapolis. Iowa repressed brick, from Des Moines, \$15.75 per thousand, F. O. B. cars, Minneapolis. Purington repressed brick, from Galesburg, Ill., price per thousand, \$15.60 F. O. B. cars, Minneapolis, and the Flint Standard brick, of Des Moines, Iowa, at the price per thousand of \$15.75 F. O. B. cars, Minneapolis; also a few sample brick made from Coon Creek, Minnesota clay, donated by Mr. Humphreys, were put down.

Part of the work was put in with a sand filler only, and part with pitch filler, to test the difference. According to a census of the travel taken at that place during the week of December 7th to 13th, the average number of vehicles from 6:00 o'clock A. M. to 7:00 o'clock P. M. was 3,517. (See accompanying table for detail as to the tonnage, etc.)

The cost was \$1.29 per yard, distributed as follows:

Tar filler.....	.13
Brick.....	.92
Labor laying.....	.112
Hauling.....	.07
Sand.....	.051
Miscellaneous.....	.008

\$1.291

The cost of pitch and laying is high, owing to the cold weather, and to the way the work had to be done in small patches, so as to keep up both the regular travel and take care of the street car service. The number of the various brick laid, per square yard, was as follows :

Galesburg.....	56 $\frac{3}{4}$
Streator.....	64 $\frac{1}{2}$
Iowa repressed.....	66 $\frac{1}{2}$
Flint.....	65

The bricks were bought without specifications. The various dealers were simply asked for a price on their respective best paving brick, and to submit samples. No tests were made. The National Brick Makers' Association has for some time been engaged in the task of preparing standard specifications for paving brick but as yet no result of the investigation has been published. It is to be hoped that such specifications will be established, as it certainly will be of considerable benefit both to the manufacturers as well as to the consumers.

I think I can fairly state that the brick will answer the purpose for quite a number of our streets, particularly if the vitrified brick industry could be developed in near proximity to Minneapolis, so as to cut the cost of brick pavements down to \$1.25 or \$1.30 per square yard.

I most respectfully beg to call your attention to the condition of our down town streets, and that proper steps should be taken as early as possible to determine which street should be repaved, and contracts awarded, so as to get the main business portion of our city in good shape for the several large conventions that will meet here during the coming year, and at least 100,000 strangers are sure to gather in our city.

I would recommend that the following streets be repaved with something better than cedar, during 1896. The approximate amount of yards, and the proportion between property owner, city and Street Railway Company, is given in the following table:

APPROXIMATE PAVING ESTIMATE.

STREET.	FROM	TO	Sq. Yards Property Owner.	Sq. Yards City's Share.	Sq. Yards Street Railway.	TOTAL.
Washington Ave....	Third Ave. S....	Third Ave. N....	11,849	4,650	5,023	21,522
Second Ave. S....	Washington Ave.	Grant St.	17,414	7,299	400	25,113
First Ave. S....	Washington Ave.	Seventh St....	5,874	2,889	3,722	12,485
Nicollet Ave....	Tenth St.	Thirteenth St....	5,603	1,255	.....	6,858
Hennepin Ave....	Sixth St.	Tenth St.	7,039	1,715	2,611	11,365
Seventh St.	Seventh Ave. S....	First Ave. N....	14,561	4,084	879	19,524
Sixth St.	Second Ave. S....	Hennepin Ave....	4,764	94	2,064	6,922
Fifth St.	Second Ave. S....	First Ave. N....	8,108	215	.....	8,323
Fourth St....	Second Ave. S....	First Ave. N....	6,676	620	550	7,846
Third St.	Third Ave. S....	First Ave. N....	5,538	1,041	2,790	9,369
Western Ave....	First Ave. N....	R. R. Bridge....	4,164	1,074	3,047	8,285
		Total	91,590	24,936	21,086	137,612

According to the accompanying three tables of census of travel on Nicollet and Hennepin avenues and Bridge square, the tonnage per foot of width of roadway is:

Nicollet avenue, at Fifth street....	{ Maximum, 154.4 tons. Minimum, 24.5 tons. Average, 115.1 tons per seven days.
Hennepin avenue, at Third street..	{ Maximum, 88 tons. Minimum, 12.5 tons. Average, 61.7 tons per seven days.
Bridge Square	{ Maximum, 72.4 tons. Minimum, 10.7 tons. Average, 58.85 tons per seven days.

SUMMARY OF RECORDS OF TRAVEL ON

Nicollet Avenue, City of Minneapolis, Minn., giving the total number of horses and vehicles, and the estimated weight of the same, in tons (of 2,000 lbs.), from 6 a. m. to 7 p. m. Observations taken at No. 423, between Fourth and Fifth streets. Width of street between curbs, 50 feet. Paved with asphalt in 1895. Present structural condition of pavement, 6-inch concrete. Clean or dirty? Dirty. No. of street car tracks, none. Time, standard or local? Standard.

DATES, YEAR 1895.	Weather.	Dec. 16th. Monday.			17th. Tuesday.			18th. Wednesday.			19th. Thursday.			20th. Friday.			21st. Saturday.			22d. Sunday.			Average tons per day for each one foot width of street.
		Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	
Vehicles & load under 1 ton, esti- mated at ½ ton.*	Walking..	1464	1027	1245.5	2242	1728	1985.0	2062	1536	1774.0	2114	1580	1847.0	2267	1750	2008.5	2610	2040	2325.0	93	76	84.5	1836.0
	Trotting..	3261	2751	3006.0	3741	3123	3432.0	3912	3314	3613.0	3946	3338	3642.0	4126	3481	3803.5	4824	3649	4236.5	1193	987	1091.0	3572.1
	Speeding..																						9300.5
Vehicles & load from 1 to 3 tons, estimated at 2 tons.*	Walking..	285	160	462.5	409	225	654.5	336	188	544.0	384	205	602.0	486	257	757.0	485	263	768.5	9	5	14.5	312.0
	Trotting..	135	83	228.5	139	85	239.5	118	68	195.0	131	73	211.5	83	51	143.5	137	76	220.5	18	11	31.0	108.7
	Speeding..																						63.8
Vehicles & load over 3 tons, esti- mated at 4 tons.*	Walking..	78	39	195.0	76	38	190.0	80	40	200.0	70	35	175.0	58	28	141.0	62	31	155.0				60.6
	Trotting..																						30.1
	Speeding..																						150.7
Horses, not at- tached to ve- hicles*	Walking..	6		3.0	8		4.0	6		3.0	4		2.0	5		2.5	5		2.5	1			5.0
	Trotting..	11		5.5	6		3.0	7		3.5	8		4.0	11		5.5	21		10.5	3			9.6
	Speeding..																						4.8
Bicycles.....			675			719		1294				1307		1475				1403			536		
Totals.....		5240	4060	5146.0	6621	5199	6508.0	6521	5146	6332.5	6657	5231	6483.5	7036	5567	6861.5	8144	6059	7718.5	1319	1079	1223.0	5694.0
																							5757.2
																							115.1

*All horses estimated at one-half ton.

+Weight of horses only—weight of cars not included.

#Street car horses excluded.

PERCENTAGES WITH REFERENCE TO SPEED.

	Horses.#	Vehicles.	Tons.#
Walking.....	37 ^{8.0} _{1,000}	34 ^{7.8} _{1,000}	40 ¹⁶ ₁₆
Trotting.....	62 ^{10.0} _{1,000}	65 ^{10.6} _{1,000}	59 ¹⁶ ₁₆
Speeding.....			

PERCENTAGES WITH REFERENCE TO WEIGHTS.

Vehicles, estimated, 1/2 ton.....	37 ^{8.8} _{1,000}
" " 2 tons.....	81 ^{0.0} _{1,000}
" " 4 tons.....	21 ^{0.0} _{1,000}
All horses, 1/2.....	51 ^{5.3} _{1,000}

Remarks.—Maximum, 154.4 tons per foot of width per day. Minimum, 24.5 tons per foot of width per day. Note.—Bicycles not counted in totals.

SUMMARY OF RECORDS OF TRAVEL ON

Bridge Square, city of Minneapolis, Minn. Giving the total number of horses and vehicles, and the estimated weight of the same, in tons (of 2,000 lbs.), from 6 a. m. to 7 p. m. Observations taken at Union Depot between High street and Steel Arch Bridge. Width of street between curbs, feet 101. Paved with brick in 1885. Present structural condition of pavement concrete on buckle plates. Clean or dirty? Dirty. No. of street car tracks, two, 15 feet. Motive power used, electric. Street car tracks paved with brick. Time, standard or local? Standard.

DADES, YEAR 1885.	Dec. 7th. Saturday.	8th. Sunday.	9th. Monday.	10th. Tuesday.	11th. Wednesday.	12th. Thursday.	13th. Friday.	Average tons per day for each one foot width of street.
Weather.	Max. tem. 30° Min. " 15° Daily avg. 15° Wind n. 13 m. Whrr., clear. Rain or s'w 0	18° 15° S. 10 mi. Cloudy. 0	24° 14° 10° S. E. 7 mi. Cloudy. Trace.	33° 25° 10° S. 12 mi. Clear. Trace.	39° 28° 11° N. W. 15 mi. Cloudy. Trace.	31° 26° 3° S. E. 12 mi. Cloudy. 0	36° 28° 8° S. E. 8 mi. Cloudy. 0	Average per day for seven days.
	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.	Horses. Vehicles. Tons.
Vehicles & load under 1 ton, esti- mated at ½ tons.*	907 568 737.5 3759 2909 3379.0 5 5 5.0	95 53 74.0 799 674 736.5 1 1 1.0	978 613 795.5 3228 2455 2841.5 4 4 4.0	900 576 738.0 2890 2209 2609.0 7 7 8.5	757 456 606.5 2973 1663 2353.5 6 6 6.0	785 469 627.0 2936 3234.5 3726.2 2 2 2.0	767 474 619.5 2991 3358.5 3145.4	458.4 488.4 599.7 2546.7 2846.1 3.6 3.8
Vehicles & load from 1 to 3 tons, estm. at 2 tons.*	566 302 887.0 205 118 338.5	22 13 37.0 36 19 56.0 2 2 5.0	574 343 973.0 103 541.5 330 2 2 5.5	577 318 924.5 390 207 579.0 1 1 2.5	521 284 928.5 392 233 632.0 4 4 10.0	515 283 843.5 437 246 710.5 2 1 3.0	525 288 836.5 328 186 536.0 1 1 2.5	471.1 293.0 761.7 291.3 171.7 489.1 1.9 1.6 4.1
Vehicles & load over 3 tons esti- mated at 4 tons.*	61 31 154.5	4 2 10.0	216 108 540.0	90 180 705.0	158 78 391.0	122 60 301.0	90 45 225.0	105.9 72.0 340.9 0.9 0.4 2.1
Horses, not at- tached to ve- hicles.*	38 19.0	7 3.5 1.5	9 5.0 10	21 10.5 8.0	14 7.0 2.5	14 7.0 5.5	18 9.0 5.0	17.3 8.6 7.9 3.9 0.1
Specially heavy loads, over 5 tons	.....	.....	4 1 8.0.....	.....	.....	.....	.....	.....
No. of st. cars*— electric.	614 128 460	500 128 172	606 164 432	604 139 514	628 158 433	599 147 510	608 158 514	.....
Bicycles.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	5541 4023 5520.5	969 764 924.5	5337 3719 5718.5	5464 4188 6245.5	5312 3934 5677.5	5421 4007 5734.5	5469 3988 5699.5	4786.8 3517.4 5061.1

*All horses estimated at one-half ton.
+Weight of horses only—weight of cars not in-
cluded.

#Street car horses excluded.

PERCENTAGES WITH REFERENCE TO SPEED.

	Horses.†	Vehicles.	Tons.‡
Walking.....	27 3.05 71 9.95	22 5.15 77 23.6	33 3.12 66 0.30
Trotting.....	.....	.....	.....
Speeding.....	0 1.000	0 1.000	0 1.000

PERCENTAGES WITH REFERENCE TO WEIGHTS.

Vehicles, estimated, † tons	29 7.25
" " " " " "	2 " 17.880
" " " " " "	4 " 5.725
" " " " " "	over 5 " 0.935
All horses, ‡	47 1.000

Remarks.—Max., 72.4 tons per foot of width per day. Min., 10.7 tons per foot of width per day. Note.—Street cars and bicycles not counted in totals.

SUMMARY OF RECORDS OF TRAVEL ON

Hennepin Avenue, City of Minneapolis, Minn., giving the total number of horses and vehicles, and the estimated weight of the same, in tons (of 2,000 lbs.), from 6 a. m. to 7 p. m. Observations taken at No. 258, between Third Street and Washington Avenue. Width of street between curbs, 64 feet. Paved with asphalt in 1894. Present structural condition of pavement, 6-inch concrete. Clean or dirty? Dirty. No. of street car tracks, two, 15 feet. Motive power used, electric. Street car tracks paved with granite. Time, standard or local? Standard.

DATES, YEAR 1895.	Dec. 17th. Tuesday.		18th. Wednesday.		19th. Thursday.		20th. Friday.		21st. Saturday.		22d. Sunday.		23d. Monday.		Average per day for seven days.	Average tons per day for each one foot width of street.			
	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.	Tons.	Horses.	Vehicles.			Tons.		
Weather.	Max. tem. 42°	30°	30°	20°	36°	34°	32°	40°											
	" " 26°	19°	15°	19°	15°	24°	23°	16°											
	Daily rng. 16°	10°	10°	10°	21°	9°	9°	16°											
	Wind S. 7 mi.			N. W. 3 mi.	S. E. 7 mi.	S. E. 12 mi.	S. W. 4 mi.	S. E. 12 mi.											
Weather c'l'r.	.....	.....	.....	N. W. 3 mi.	S. E. 7 mi.	S. E. 12 mi.	S. W. 4 mi.	S. E. 12 mi.								
Rain or S. Tr.		Clear.	Clear.	Cloudy.	Cloudy.	Cloudy.	Cloudy.	Trace.											
		0	0	0	0	0	0	Trace.											
Vehicles & load { under 1 ton, e-t- mated at ½ ton.*	751 2275 4	580 1861 4	665.5 2068 4.0	683 1720 6.0	557 1391 2.2	643.5 1747.5 2.0	710 2087 2.0	535 1692 2.2	622.5 1889.5 2.2	723 1811 4.2	844.0 2028.5 4.2	73 567 4	66.5 491.0 3.5	985 2785 2.1	881.5 1947.3 2.1	536.3 1571.0 2.5	617.9 1759.1 2.8		
Vehicles & load { from 1 to 3 tons, estm. at 2 tons.*	261 118 3	141 62 3	412.5 183.0 7.5	276 126 7.5	175 153 2.1	488.0 419.0 2.1	243 104 2.1	134 65 2.1	389.5 182.0 3.0	243 81 3.0	384.0 130.0 3.0	4 25 4	6.0 44.5 4.0	287 161 4.0	463.5 278.5 4.0	219.0 113.5 4.0	122.0 69.0 4.0		
Vehicles & load { over 3 tons, esti- mated at 4 tons.*	20 8 6 1	10 6 3	50.0 4.0 3.0 .5	58 3.0 10 5	29 10 3 1	145.0 5.0 1.5 1.0	40 3 1.5 0.5	20 1 3 2	12 6 3 1	60.0 3.0 1.5 1.0	42 4 2 1	21 2.0 1.0 1.0	105.0 1 1.0 1.0 0.5	58 2 4	29 1.5 2.0	145.0 3.3 4.0	34.5 1.1 2.0	86.4 7.1 2.0
Horses, not at- tached to ve- hicles.*
Specially heavy loads over 5 tons
No. of street cars *†-electric	1129 247
Bicycles...	430
Totals	34472661	33982983	32263225.5	30772233070	0312823053057.5	39727353512.5	674496	612.0	42873351	4312.5	53076.6	2318	83028	2	61.7				

PERCENTAGES WITH REFERENCE TO WEIGHTS.

Vehicles, estimated, 1/2 ton.....	34.571
" " 2 tons.....	12.628
" " 4 tons.....	2.1006
" " 5 tons.....	0.1556
All horses + over.....	50.012

PERCENTAGES WITH REFERENCE TO SPEED

Walking.....	31.646	29.161	35.074
Trotting.....	68.232	70.730	64.824
Speeding.....	0.1006	0.1006	0.1006

*All horses estimated at one-half ton.

†Weight of horses only—weight of cars not included.

‡Street car horses excluded.

Remarks.—Max., 88.0 tons per ft. of width per day. Min., 12.5 tons per ft. of width per day. Note.—Street cars and bicycles not counted in totals.

SEWERS.

During the season 1895 an addition of 34,118.4 feet, or 6.462 miles of new sewers was made to the system, making a grand total up to date of 129 405 miles of sewers and sewer tunnels. Table No. 28 gives the number of feet built in each ward, also the number of buildings connected with our sewers. This last table also shows the comparative number of buildings connected with sewers per mile, and also water connections made.

As your honorable body has decided not to order any sewers for the season of 1896 until after the first of January, 1896, no table, as heretofore, for this work, can be shown, but to assist in ordering new work a table containing an estimate of cost of a great number of sewers that have been asked for is hereto appended under table No. 31.

The work has been done very successfully without accidents to men or work of any serious character whatsoever. The accompanying plate, No. 4, shows the section of the large sewer built on Marshall street northeast in a thirty-three (33) foot cut. The arch is built of brick, to be able to refill sooner, and use less centers than could be done with concrete. The balance of the work was made of American Portland cement concrete, Empire Portland cement being used, and I am pleased to state that an excellent result was obtained with this cement, although the following proportion in the concrete was used, viz:

One part cement, three parts sand and gravel (about equally mixed) and five parts crushed lime rock ($2\frac{1}{2}$ in. size.)

This proportion was arrived at after considerable experimenting with the various cements offered upon advertising for same, and with various mixtures. The cement cost \$2.60 per barrel. The cost of the concrete material was \$4.07 per cubic yard, and labor in mixing and placing in the work was 98 cents. The work has set up beautifully in every respect. 1,732.3 feet of this sewer were built at a cost of \$20,931.93.

Another noteworthy sewer, though not so large, was the Fillmore street sewer of 5,922 feet in length, which was constructed through some of the worst material ever struck in the city.

Practically through its entire length, in a rock that did not seem to have any defined seams at all, making blasting slow in the narrow trench, also with a great deal of water to contend with, and from Twenty-second avenue N. E., on the top of the rock, a stratum of conglomerated boulders was encountered that was exceedingly difficult to handle. The work was however pushed at the rate of 75 feet a day during the latter part of the season with two machines and five steam drills. Appended cut shows the arrangement of the machines.

During 1894, a relief tunnel was constructed on First avenue north, from First street to the river, to relieve the overcrowded Washington avenue sewer. This work has done very well, but still not enough to relieve Nicollet avenue, which empties into Washington avenue south sewer, the first sewer built in Minneapolis, and which is too small. To relieve Nicollet avenue, during heavy storms, through



PLATE 4 SECTION OF MARSHALL ST. SEWER

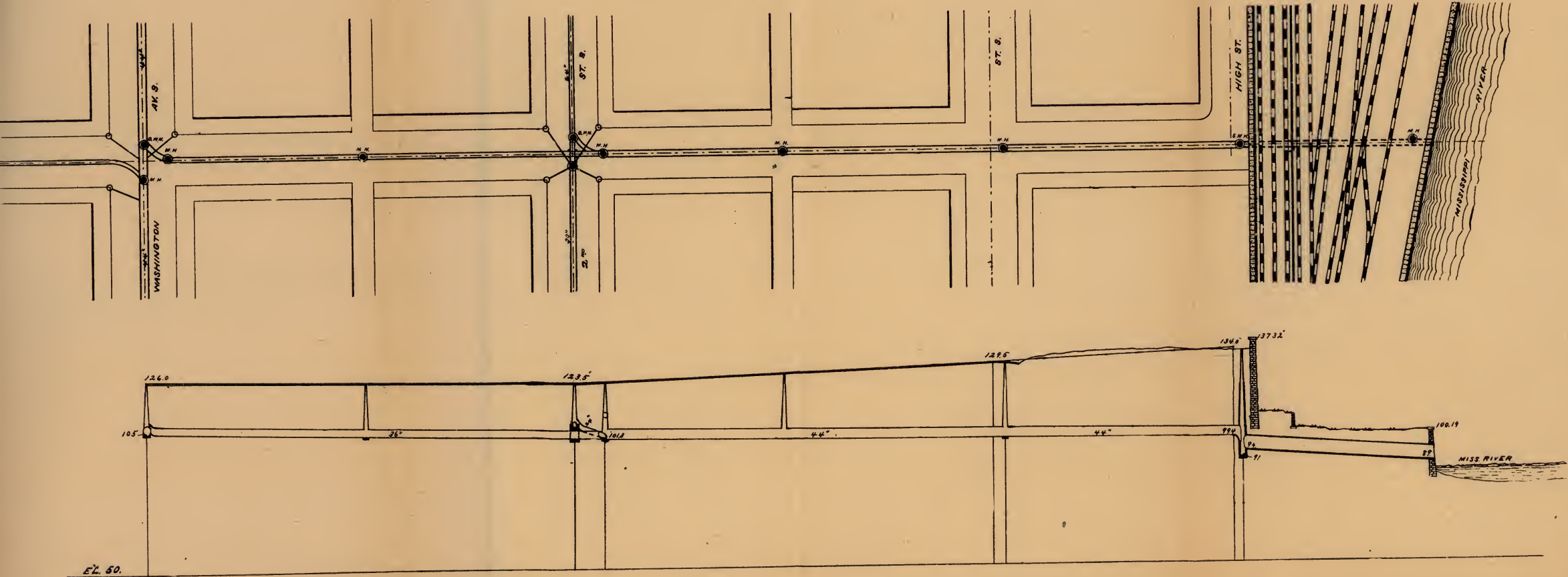
PHOTOGRAPHED BY N. W. PHOTO COMPANY, CO. - M. J. S.

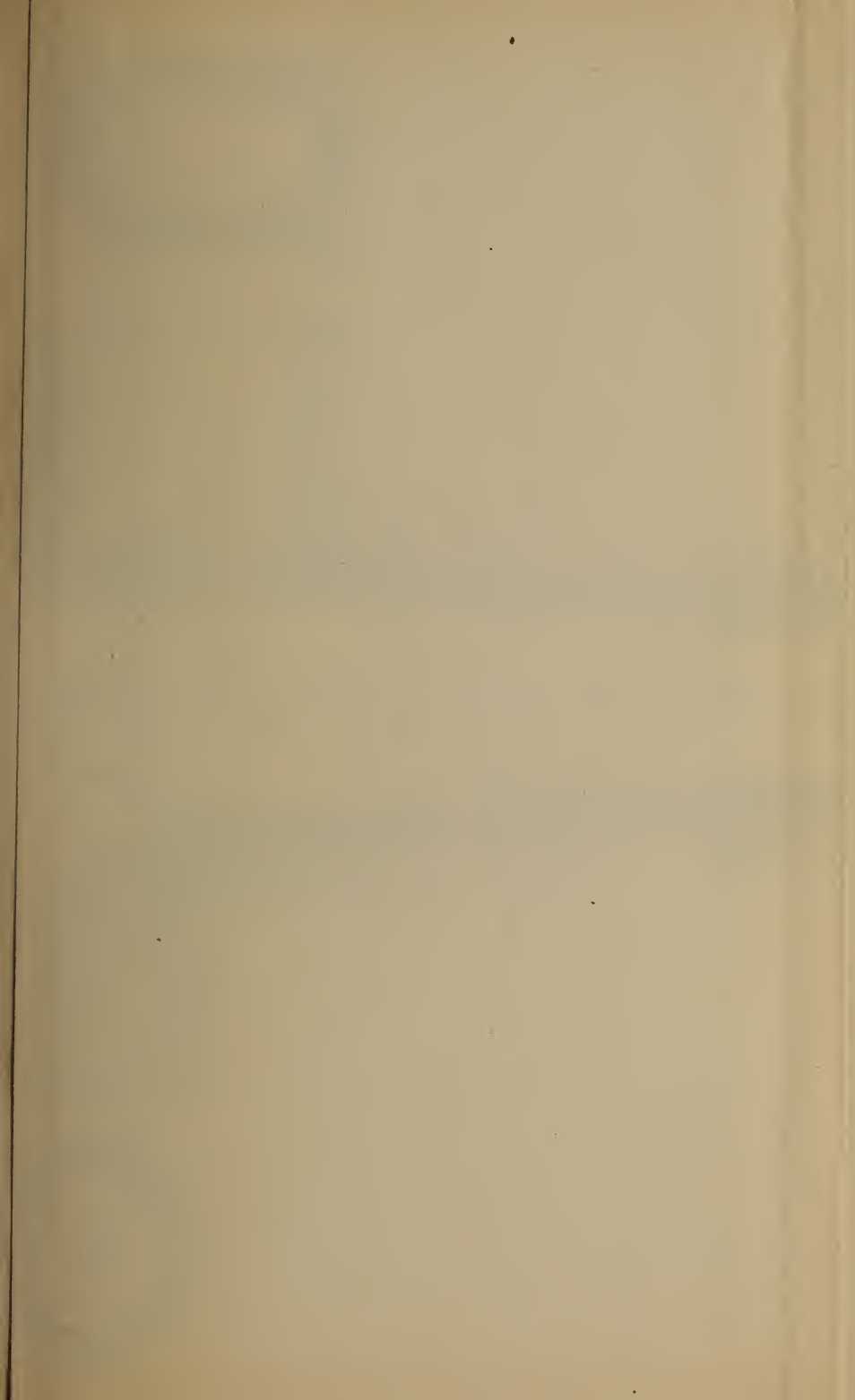
PLATE 5 SHOWING ARRANGEMENT OF MACHINES FILLMORE CO. STEAM



PROPOSED RELIEF SEWER ON 2ND AV. S.

HOR. SCALE 1" = 100'
VERT. " " = 40'





DETAILS OF 2ND AV. S. RELIEF SEWER.

SCALE 1/4" = 1'

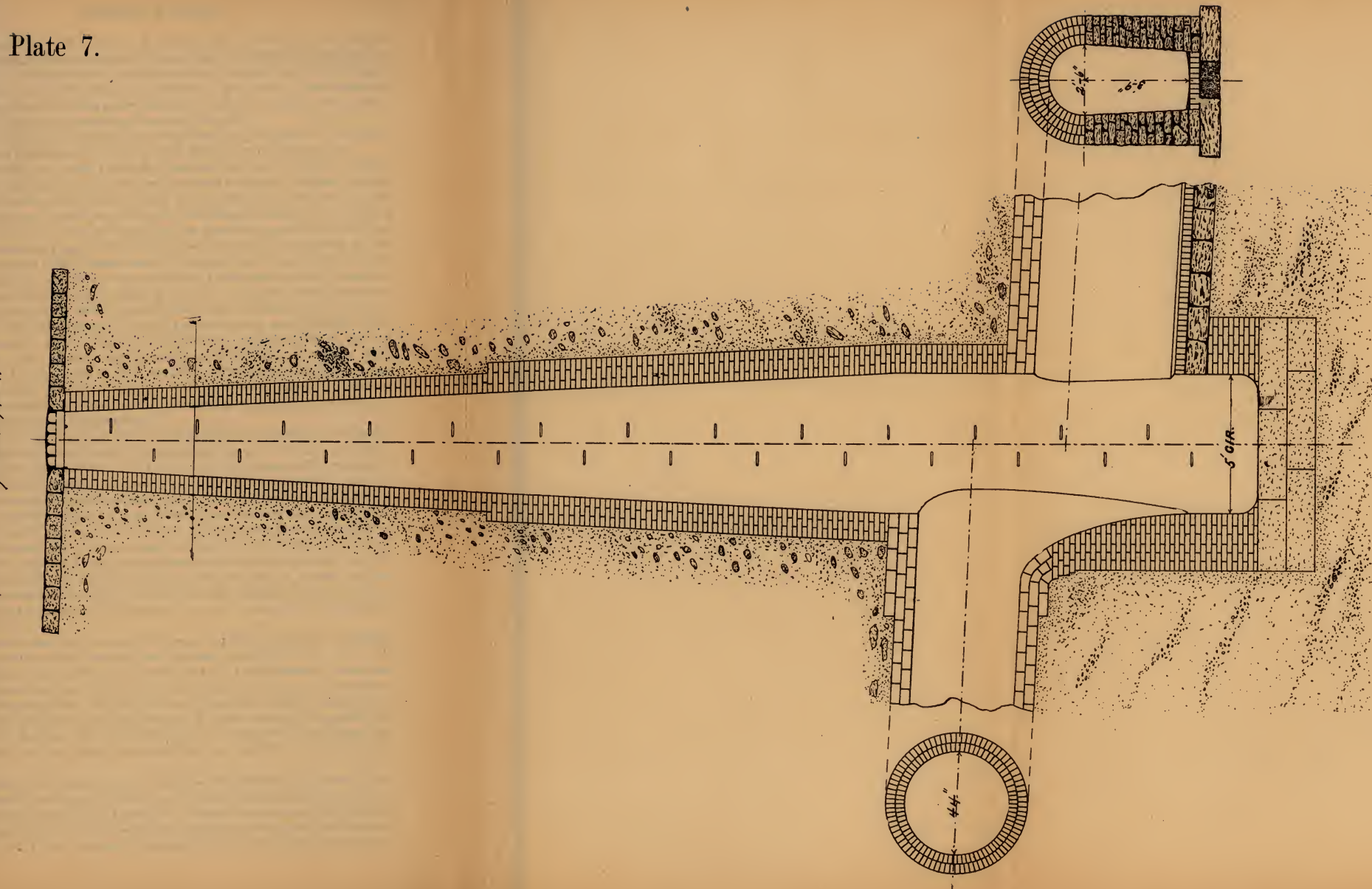


Plate 7.

the Washington avenue sewer, I have, after considering very carefully several schemes, come to the conclusion that the most effective relief will be obtained by constructing a storm sewer on Second avenue south, from Washington avenue to the river. Assessments can be made for this work, as no sewer is built on Second avenue, although in the very business heart of the city.

Accompanying plans show the proposed arrangement. The estimated cost is \$9,690.24, of which sum \$1,851.22 can be assessed.

As the funds set aside from the permanent improvement revolving fund for 1896, are rather limited, and as I honestly believe paving in the down town districts is more necessary than sewers in the outlying districts, I feel that the city should get along this coming year with as little sewer building as possible, and will therefore not recommend any particular extensions, with the exception of the above mentioned relief sewer, and the extension of the Eighth street south sewer, from Sixth avenue south to First avenue south, and on Third avenue south, from Eighth street to Ninth street, thereby completing the relief sewer, which, upon my recommendation, was built on Second street south, Ninth avenue south and Eighth street to Sixth avenue south, but not completed on account of lack of funds. The cost of the work would be \$11,409.00, of which sum \$3,661.50 can be assessed. The relief to Plymouth avenue sewer could also, with great advantage, be built from Eleventh avenue north to Plymouth avenue, on Fifth street, at a total cost of \$3,450, of which sum \$2,152 can be assessed.

I again most respectfully beg the Aldermen to assist this department by ordering the Street Commissioners of the various wards where unpaved streets with heavy grades are located where sewers are built, to temporarily pave the gutters with limestone or cobblestone to prevent the continuous washing out of the gutters, thereby filling the sewers with sand which must be cleaned out at great expense and which also on the heavy grades greatly damages our inverts by the steady grind of sand and gravel; and right in connection with this matter, I beg to recommend that certain sewer inverts be reconstructed, using vitrified paving brick in place of our ordinary hard sewer brick as they will not stand the wear as has been conclusively shown, for instance, on the Lyndale Avenue sewer at Lowry Hill.

An argument has heretofore been used against the use of vitrified brick, viz: that mortar would not adhere to such brick. I do not think, however, that the point is well taken. I still have to continue the complaint, that so far, I have been unable to stop some of our free but inconsiderate citizens from using our catch basins and manholes for depositories of garbage. I have however, appealed to the Chief of Police, who will endeavor to stop this nuisance by arresting and seeing that the offenders are punished according to law.

I am pleased to report that the work performed at the Sewer Yard is giving most gratifying results, and that this establishment is becoming a money maker for the city. Among other work performed, the following tools were dressed, sharpened and repaired: 6057 picks sharpened; 113 picks ironed; 242 picks steeled; 69 wedges repaired;

15 wedges made; 67 bull points sharpened; 68 crow bars sharpened; 32 hammers faced; 1341 drills sharpened; 96 maul rings made; 118 maul rings repaired; 26 wheel barrows were built; 27 iron brick boxes were built; 20 iron cement pails.

In addition to this, all cement, 18,040 barrels, and all sewer pipe was tested at the yard; experiments are made there with concrete of every kind, all centers for work are made there. All sewer machines repaired and most everything done in connection with the sewer department; also all other departments find it very convenient to apply to the sewer yard for assistance. It, therefore, might not be ill-advised to suggest that some of the various wards club together and establish blacksmith shops, where all repairs, or a great many, could with advantage be made for the various street commissioners' crews, which run quite large repair bills in this line.

In regard to the purchase of cement, I also beg to make a recommendation. The usual method is to advertise for cement and give the contract to the lowest bidder who can furnish a brand of cement that will comply with the specifications, and is known in addition to be a reliable cement. I think that not only the above requirements should be complied with, but no bidder should be awarded the contract who has not storage facilities for a few car loads of cement. The Testing Department is frequently obliged to test cement on cars in the railway yards, and very often a car to-day in one yard, is in two days' time in some other yard, thereby causing considerable trouble and delay. Any bidder who has not proper storage facilities should not be considered in competition with a bidder who has.

I also beg to recommend that steps be taken to purchase a rain recording gauge that could be operated in connection with the present U. S. Weather Bureau, as Mr. Beals, the U. S. Recorder, has signified his willingness to take the observations if the city will furnish the instrument. The cost would be about \$200.00.

Proper testing machines should also be purchased, so as to enable the department to make tests of materials on a larger scale than can at present be done without outside assistance.

We have at present 75 so-called Minneapolis flushers in place, and still there are 352 dead ends that must be flushed. I would recommend that three or four of the different kinds of flushers be placed on trial in the system to determine which is best.

Special attention is called to the Tables on Cement.

RAILWAY CROSSINGS AND BRIDGES.

No work with reference to abolishing railway grade crossings on those railway systems where they still exist was done; although the substructure for the new Seventh street bridge over the tracks of the Great Northern Railway, and of the Minneapolis & St. Louis Railway Company, was built, so as to receive the superstructure in 1896, at a cost of \$6.50 per cubic yard of masonry at a total cost of \$8,024.64.

The Great Northern Railway Company also replaced an old wooden bridge over the tracks on the Osseo branch at Cedar Lake road with an iron bridge, although the company was only required to do this in 1896.

The Minneapolis & St. Louis Railway Company also built an iron and steel bridge over the tracks at Kenwood without request from the city, but according to a private agreement with property owners who sold the right of way to the company.

As we now have 9 bridges across the river and 37 bridges over railway tracks with an additional number of 53 bridges over streets and creeks, etc., the item of maintenance and repair is rapidly increasing, as is also the work in the bridge department, but care is taken to keep the expenses down as low as possible.

During 1896, quite a little painting will have to be done and I would recommend that paint of an asphaltic composition be used as much as possible, because so far no mineral paint appears to stand the fumes from passing locomotives under the bridges.

The proposed widening of the Central Avenue bridge and the Washington Avenue bridge, both over the river, will have to be postponed. The only new work in the bridge line ordered for 1896, is the completion of the Seventh street bridge, a wooden bridge over Minnehaha Creek on Nicollet Avenue, and two small structures over Bassett's Creek and Minnehaha Creek of a temporary character.

RESERVOIR.

As considerable work has been done during this year on the extension of the present water works by part construction of the new reservoir, I beg, in connection with the report on said work, to submit a brief history of the idea of extending and changing the present system from a direct pressure system delivering the raw Mississippi river water into a gravity system, delivering pure filtered water to the consumers. During the winter seasons of 1893 and '94, I had surveys and levels run northeast beyond the city limits to determine the topographical condition of this section of land. I found it to be the highest part in the vicinity of Minneapolis; that it was well fitted for a reservoir site, and may have made remarks to that effect. For several years there had been considerable talk about the undesirable and suspicious condition of our river water, and the various health officers commented regularly thereon. Dr. Kilvington, when health commissioner, was very aggressive, and Dr. Kelly continued on the same line. During the spring of 1894, the outlook for the laboring men was rather dark. Petitions for work came frequently to the city council asking for the issuance of bonds for permanent improvement, etc. May 25, Mr. Thomas Lowry sent me a letter in which he stated that he understood that I had made surveys and found a proper reservoir site on his land, and if that was the case, he would donate fifteen acres of said land for a reservoir, thereby doing the city a great benefit, and, if work could go on, also helping the laboring men. This letter I submitted to the city council, where it was referred to the water works committee, as was also a motion by Mr. Gray instructing me to prepare plans and estimates for a reservoir with a filter in connection with the present system. June 8th, Health Commissioner Kelly called the city council's attention to the very bad condition of the water in the river by submitting a long report of analysis of the water, which was referred to the committee on water works, health and hospitals, and myself.

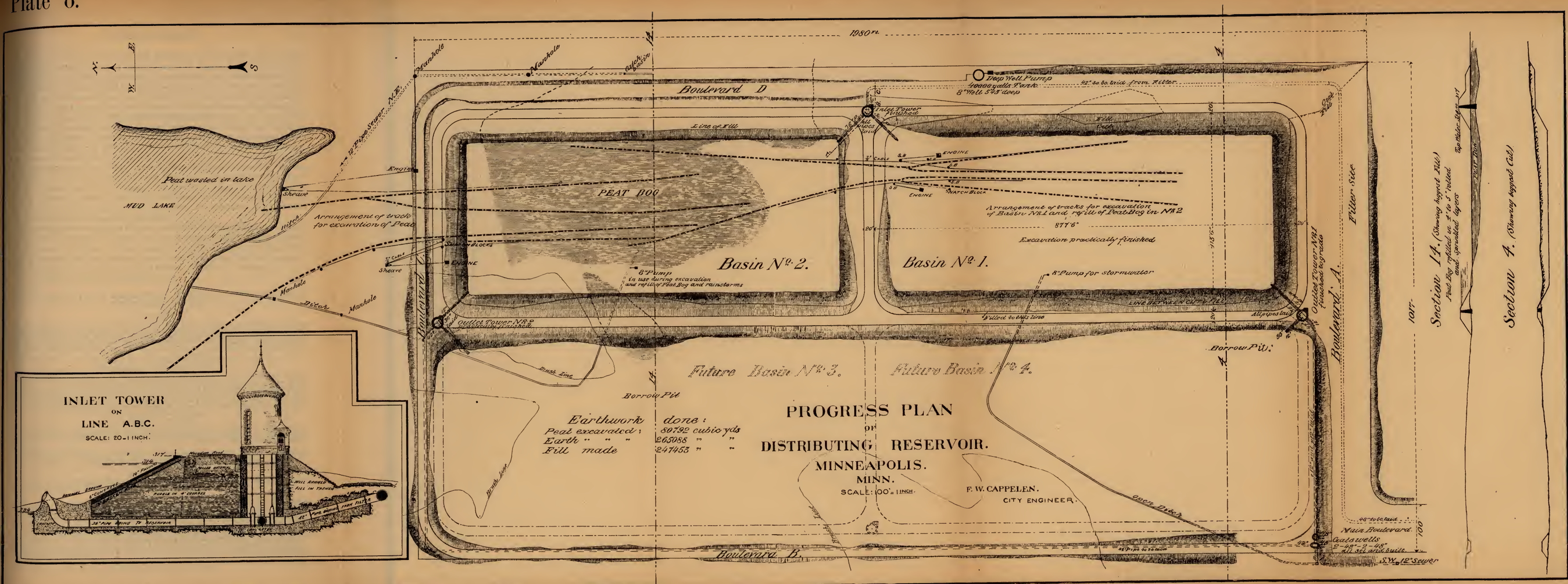
The same date the city council instructed me to investigate the water supply, both with reference to its condition and to the proper remedy, if faulty, and also its distribution. August 3d, I made my report advocating the river supply, the construction of a 100,000,000 gallons distributing reservoir, and a 35,000,000 gallons filter plant on the land owned by Mr. Lowry, and stated that at least forty-five acres would be required in place of the fifteen acres offered by Mr. Lowry.

The estimated cost of this improvement was \$1,150,000 in round numbers. The 10th of August, Mr. Lowry offered the forty-five acres, and also about twelve acres for a 100 feet boulevard from the city limits to the reservoir, diagonally across his land. I also presented the report as a paper to the American Water Works Association, which met in Minneapolis on the 23d of August, and after a thorough discussion of the subject, and verification of the estimate, the council finally accepted Mr. Lowry's offer on the 23d day of November, 1894. During December \$75,000.00 was ordered set aside from the water works fund; also a resolution adopted authorizing the sale of \$200,000.00 reservoir bonds. As no work could be commenced in the winter, plans and specifications for building the reservoir were completed, and on the 29th of March, 1895, I reported this to your honorable body.

April 5th the bonds were ordered advertised for and bids were also asked for on water pipe, special castings, gates and the reservoir proper as indicated in the following specifications.

Bids were received April 30th, and May 3rd contracts were awarded for gates and specials, but all bids were rejected for water pipe and the reservoir work. The lowest bid on pipe was \$23.50 a ton, but by buying in the open market pipe was secured for \$19.60 per ton. The rejecting of the lowest bid for the reservoir work was against my advice, as a considerable saving could be made by contract work against day labor, but your honorable body ordered the work to be done by day labor under my direction. A special committee of thirteen, consisting of one Alderman from each ward, was also appointed, to be known as the Reservoir Committee.

On May 20th, I was instructed by said committee to commence work, which was done according to specifications upon which bids were received and which are hereto attached. I accordingly at once made arrangements for the hiring of Petler cars at the rate of 15 cents per car per day and for track at the rate of 12 cents per one hundred feet a day, extremely low figures, which had never been approached heretofore in this city. I also purchased some wheel scrapers for \$24.00 a piece as good as new, when they cost \$39.00. A mile of 20 pounds rail was also bought, and it was a good investment. After all the work was over, this rail was again sold for the purchase sum, thereby saving about a \$1,000 to the city in rental. Blacksmith shop and carpenter shop were built; a building, an old farm house, located on the donated land, was moved off the site and fixed up for Engineer's office. As the work progressed contracts were let for stone, brick, cement, a steam roller, etc., fuel and lumber came under general city contracts and the lowest bidder always given the contract, if responsible. The committee met generally every Tuesday, and acted upon my recommendations and all other



matters pertaining to the work, and several visits were made by said committee to the work. Considering the magnitude and it being executed by day labor, everything went along very satisfactorily.

The bonds were bought by the Sinking Fund Commissioners and as soon as this was done, a temporary injunction was granted on the claim that the limit of the bonded indebtedness established by law was over-reached. This injunction was dissolved by five judges of the District Court and an appeal taken to the Supreme Court by the complainants. The Supreme Court reversed the decision of the lower court, but on a point of law not raised by the complainants, nor considered by the District Court, the Supreme Court decided that the bonds were legally issued, that the limit of the bonded indebtedness was not reached, but that the Sinking Fund Commissioners could not buy the bonds themselves—further, the District Court settled a much disputed question, viz: That money held in the Sinking Fund must be considered as so much of an off set against the indebtedness of the city.

To straighten the tangle hereby incurred, the bonds are now being sold again after those bought by the Sinking Fund Commissioners have been cancelled. The genneral water works fund has been able to furnish all the money spent and this fund will be properly reimbursed by the proper sale of the bonds above referred to.

The following are the specifications:

SPECIFICATIONS FOR A DISTRIBUTING RESERVOIR FOR MINNEAPOLIS WATER WORKS SYSTEM.

LOCATION.

The reservoir is to be constructed in section 25, township 30, range 24 west, near the northeasterly part of the City of Minneapolis, Minnesota, on land owned by the City of Minneapolis. It will be partly in excavation and partly in embankment. Its lowest part of bottom will be at an elevation of two hundred ninety-two (292) feet above city datum and the top of its coping at the elevation of three hundred seventeen (317) feet.

The full water service will be at elevation three hundred fourteen (314) feet.

MATERIAL AND LABOR FURNISHED.

All the pipes, valves and special castings and wrought iron work in connection with the valves and specials, together with their bolts and anchors required on the reservoir site to be incorporated in the work as finished, will be furnished to the contractor upon said reservoir site, and are to be received, transported and set in place by him. All other materials not found on the premises and all tools, fixtures, carting and labor required to complete the whole of the work in accordance with these specifications, shall be furnished by the contractor at his own expense.

DIMENSIONS AND FORM.

The reservoir proper will be divided in two basins of the same size. The extreme dimensions of the reservoir from face to face of coping, will be eight hundred seventy-seven (877) feet six (6) inches long by four hundred thirteen (413) feet six (6) inches wide.

The interior paved slopes will be two (2) feet horizontal to one (1) foot perpendicular. The breadth of the top of the embankment will be twenty (20) feet from face of coping to outer angle. The sides and ends of the embankment will be joined by curves.

SLOPE TEMPLETS.

The contractor will provide good and substantial slope templets and will set and maintain them under the direction of the City Engineer.

EXCAVATIONS.

All sticks, wood, stumps and roots of trees and brush on the site are to be gathered and placed in a compact heap on the site as directed.

All porous earth, sand, disintegrating stones and rock and all material of whatever nature considered by the city engineer unfit for use in the construction of the reservoir are to be placed in a compact spoil bank on the grounds where and as directed.

The surface on which the basin floors and embankments are to rest are to be faithfully excavated down to good firm earth, at such grade and depth as the City Engineer shall direct. Excavation for the floor will all be below 293.5 as plans and condition may demand; it being graded in two intersecting planes, the highest part of which is 293.5 and the lowest 291.5.

All masonry trenches and channels required for placing pipes, foundations, masonry linings and paving are to be excavated where and as directed.

EMBANKMENTS.

All suitable earth excavated from the basin and for foundations of embankments so far as required, is to be used in the construction of the embankments. The best of the excavated material shall be used for the puddling in the best and most thorough manner about the pipes, foundation and masonry as well as puddling walls, and the best of the remaining materials shall be used near the water side of the embankments.

The channels and benches on the bed prepared to receive the embankments shall be filled with puddle if necessary, otherwise with good material, moistened and rammed, in layers six (6) inches thick evenly spread over the bed properly moistened and thoroughly rolled with 3-ton grooved rollers.

The earth embankments shall be built of spread layers not exceeding six (6) inches in thickness, properly moistened, and then rolled and rerolled with three (3) ton grooved roller until thoroughly and evenly compacted to the satisfaction of the City Engineer.

The embankment materials are to be culled from the best earth that can be selected on the site, and are to be carefully mixed in proportions as the City Engineer may direct, so as to make the most compact and impervious embankment possible with the available materials.

The right is reserved by the City of Minneapolis to order earth materials for puddling from borrow pits which will be provided outside the reservoir site at the city's discretion, and when so ordered the contractor shall select, take and use in the reservoir embankments the best material that can be selected from said borrow pits and the overhaul will be allowed as per prices herein named.

All parts of the earth filling in the trenches about the masonries and pipes and near edges of the layers and such parts as cannot be fully settled and worked by the roller shall be thoroughly rammed and settled by hand with heavy rammers.

No lumps of earth shall be carried into the embankments unless they are broken up and pulverized before the layers are spread.

Much caution shall be used in moistening and tempering the layers to a proper consistency. They shall not be allowed to become dry on their surfaces, nor shall pools of water be allowed to remain on them, neither shall they be trodden into mud pockets.

If circumstances shall require a temporary cessation of work on any particular section of the embankment, that part shall be covered and protected from excessive drying in summer, or from alternate freezing and thawing in cold weather, and its surface shall be broken up, pulverized, remoistened and rammed or rolled when work is resumed at that part again.

Pains shall be taken to carry up the layers as nearly level, longitudinally, as possible.

No stones exceeding three (3) inches in any of their dimensions shall be worked into the embankments or into the refilling of peat bog. The interior slopes of the embankment shall be built full enough so that they afterwards can be carefully trimmed off to the proper slope to receive the broken stone linings.

PUDDLING.

Puddle shall be placed as directed and found necessary. The puddle shall be made from proper clay thoroughly tempered and worked in suitable pug mills. Care shall be taken to use no more water than is necessary to render the clay plastic. If the clay from which the puddle is made is liable to injurious shrinking or cracking in drying, a suitable quantity of sand or gravel shall be added or mixed, so as to insure a uniform mixture which shall be thoroughly worked as above specified.

The puddle will be put in place in six (6) inch layers thoroughly rammed. Each layer shall be allowed to set firm and stiff but not dry before another layer is applied, and if any portion shall become hard and dry before the application of the following layer, it shall be practically broken up and rewatered and prepared so as to insure a satisfactory water tight connection.

PEAT BOG.

In basin No. 2, where the peat bog is located, the entire peat must be removed and wasted outside of the reservoir site on the low land and part of lake due North of Reservoir. The excavation must then be filled with suitable material, the filling to be done in horizontal layers in thickness of eight (8) inches to within four (4) feet of the finished grade from where the filling will be made in six (6) inch layers rolled as before specified up to the puddle line and then the puddle must be put in place as specified for puddle.

SOILING.

The exterior slopes of the embankments are to be covered with a uniform dressing of good soil, selected and stored during the progress of the work. The soil is to be six (6) inches in thickness and to be accurately graded to proper lines and then sodded with firm, rich sod, at least two (2) inches thick, so that when fully settled it shall conform to the required finished slopes.

FINISHED LINES.

The grades, dimensions and lines given for all earth work and stone lining, define the work as it is to be when all settlements have taken place.

The contractor is to maintain all the work at these lines and grades, and in good condition until the final acceptance by the City Engineer.

BROKEN STONE LINING.

The interior of the embankments will be lined with broken stone, of a quality to be approved by the City Engineer. No soap stone will be admitted in the work. The crushed rock shall not exceed two and one-half (2½) inches in dimensions in any direction.

The stones shall be absolutely free from dust and dirt and shall be evenly spread and thoroughly rammed and settled in place.

CONCRETE.

All concrete used in and about the reservoir shall have the following consistency:

One part cement, two parts sand, and four parts broken stone by actual measure. The sand and cement must first be thoroughly mixed in a dry state and then wetted to a proper consistency. With this mortar the broken stone will be thoroughly mixed. The concrete will then be placed as directed and thoroughly rammed until free mortar appears on the surface.

CEMENT.

The cement is to be of the best quality of freshly burned and ground American hydraulic cement, and shall be kept in good condition, protected from the weather, free from exposure to air slacking and from moisture until used and shall be of such brand and manufacture as the City Engineer shall approve. It must have a tensile strength of ninety (90) pounds per square inch, after being made into briquettes and exposed to the air one hour and then immersed in water for twenty-four (24) hours. It must be of such fineness that at least eighty (80) per cent shall pass through a one hundred (100) mesh sieve.

SAND.

The sand must be clean and sharp and of a coarseness to be approved by the City Engineer.

BROKEN STONE.

Same specifications as for lining, but the greatest dimension in any direction of the stones shall be two (2) inches.

CONCRETE IN BASIN FLOOR AND ON SLOPE.

The concrete of the basin floor and slopes shall be made as above specified, but must be placed on the slopes and in the floor in squares containing about fifty (50) square feet.

Iron templets must be used so as to create a three-eighths ($\frac{3}{8}$) inch joint between the blocks clear to the bottom. The concrete must be thoroughly rammed until enough mortar flushes to the surface, so that it can be perfectly trowelled and smoothed off to an even surface. If in any block not enough mortar appears, it must be supplied to give the desired surface as above specified.

JOINTS.

The templets must remain in place until the concrete has set. The templets will then be carefully removed and the joints between the blocks shall then be thoroughly filled with asphaltic cement. (to be approved by the City Engineer), heated to a temperature 300° Fahrenheit. The entire cost of filling joints must be included in the price per square yard of concrete.

CONCRETE AROUND PIPES AND IN FOUNDATION FOR GATE TOWERS AND WELLS.

The foundation for the pipes must be made first, and after the pipes are properly laid the concrete must be filled in around the pipes and be rammed as before specified. The work around out and inlet pipes in the reservoir must be neatly finished according to the plans. The foundation for the gate houses and wells will be made in connection with the pipe work as above specified.

SLOPE PAVING.

The slope paving must be laid in regular course work and is to be sound Kettle River stone or granite. The paving blocks are to be eight (8) to ten (10) inches wide, with parallel sides and square corners, and not less than fourteen (14) inches deep and eighteen (18) inches long, and not to exceed three (3) feet in length. The blocks shall be fully and firmly bedded in cement mortar. The mortar to be as before specified for concrete work, and the joints shall then be filled with asphaltic cement as above specified.

Joints to be broken at least nine (9) inches. The top surface to be pointed to one-half ($\frac{1}{2}$) inch, and sides to be dressed so as to make not to exceed one-half ($\frac{1}{2}$) inch joints.

PIPES AND CASTINGS.

All valves, pipes and special castings and indicators with the bolts, nuts, etc. required to be set in connection with the reservoir, will be delivered to the contractor on said reservoir lot, and shall be set by him, and all joints leaded and caulked in the best, most thorough and substantial manner. They are all to be bedded, plumbed, bolted and anchored as directed in a workman-like manner. The city will also furnish all gaskets, hemp and lead.

COPING.

The top of the slope paving, with the underlaying crushed rock bedding, will be covered with coping stone of Kettle River sandstone, 12 inches in thickness cut to $\frac{1}{2}$ -inch bed and joints.

These stones must be at least three (3) feet wide, and all of them must be four (4) feet long, a perfect dimension stone with square angles and corners, the face and top to be bush hammered. The stones must be solidly set and well tamped in on the back and the joints filled with cement mortar, made of one part cement and one part sand. Cement and sand to be as before specified.

RAILING.

On this coping will be erected an iron ornamental railing, according to drawings. This railing must be made in a first class manner of perfect workmanship. The cast iron posts to be of good gray iron, well moulded and cast and fastened to coping as per plan. The anchor bolts to be set, and after lining up railing, they must be fastened to stone work by melted lead poured around same. All parts of railing connected in shop must have received two coats of red lead paint before connecting up and after erection, the railing must receive one coat of red lead and oil and another top coat of linseed oil paint of color to be determined by the City Engineer.

TOP OF EMBANKMENT.

The top of embankments must be finished as indicated on drawings, and the macadam be done as specified for Boulevards B. C. and D.

The drainage will be over the outside slope with the exception of the roadway on embankment between the two basins where it will be taken care of in cobble stone gutters. These gutters to be as specified for the boulevards.

GATE HOUSES.

Upon the foundation of concrete before referred to, there will be three gate houses constructed. On the concrete foundation and after the pipes and gates have been set or after pipes have been laid ready to receive the gates, one inlet and two outlet ornamental gate towers will be built, the part below grade to consist of three (3) feet thick hard burned, sand moulded, slop sewer brick walls laid in cement mortar as specified for the concrete work. The brick to be well wetted before laying and to be laid with good bond with at least headers through every sixth course. Dimensions to be according to plans. Arches must be thrown around all pipes entering the house. Upon this tower will be built the gate house proper above grade according to plan. The vestibule of house to be placed on a separate ordinary masonry foundation as on plan.

THE UPPER PART OF THE GATE HOUSE.

The masonry will consist of cut stone facing with brick lining inside.

The brick masonry to be of good, common, well burned brick laid in cement mortar, consisting of one part American hydraulic cement as before specified and two parts of sand. Sand to be as before specified. The brick work to be laid in regular good bond, well tied in to front facing. Brick arches above door and window openings must be built to support the wall, when the same is not supported by the arch stones. The wall between main room and vestibule to be solid brick throughout and two (2) inches by four (4) inches wooden strips for fastening rafters of vestibule roof to be built in the wall. The wall inside to be neatly pointed.

Cut stone masonry will consist of Kettle river sand stone or Lake Superior Brown stone. All stone to be sound and free from defects.

The masonry will be first class broken ashlar, rock faced, dressed to three-eighths ($\frac{3}{8}$) inch bed and joints. No stones less than six (6) inches thick will be allowed. Stones must be well tied into brick wall by alternate headers and stretchers. Cap stones to be cut to shape and size as shown on plan. The top and bottom ones to run through wall. Water table to be twelve (12) inches thick. Stones to be laid to three-eighths ($\frac{3}{8}$) inch joints with same mortar as before specified. All joints to be well pointed.

CARPENTER WORK AND ROOFING.

Roof to be cone-shaped, with 2 by 6 inch rafters sized, placed 2 feet apart at bottom and converging to one point at the top. Rafters will be covered with 6 inch fencing, M. & D., surfaced one side, laid close together and bent over the rafters, so as to form a coned smooth surface. Upon the finished wood work, red ropesheeting must be nailed in a thorough manner, cups to be used; upon this sheeting will be placed Spanish tile of pattern to be approved by the City Engineer, the tile must be nailed to the roofing below in a first-class and workmanlike manner.

Apply galvanized iron final over top according to plan.

Ceiling joist to be 2 by 6 inches sized and ceiling to be beaded 4 inches, dressed and matched nailed to bottom of joists. In middle place a 10 inch steel "I" beam, 33 pounds, with $\frac{3}{4}$ inches by 8 inches by 10 inches bed plate, resting 12 inches on stone cap at each end and bolted to same with $\frac{3}{4}$ inch by 9 inch anchor bolts, two bolts at each end. This beam must be encased on sides and top with an 18 inch square box, same material as ceiling, space being left open all around beam.

Floor to rest on 6 inch 16 pounds steel "I" beams, placed as shown on plan, three of them to be provided with $\frac{3}{8}$ inch bent steel plate journals for gate stem, bolted to beam. These three beams to be bolted to the foundation with $\frac{3}{4}$ inch by 9 inch anchor bolts, one at each end.

Bottom floor to be 2 inch by 10 inch dressed and matched first common white pine planks nailed to "I" beams with 16d wire nails, clinched underneath to top flange of beam. The end of the planks will be nailed to a 4 inch by 6 inch sill laid close up to wall and rounded off on ends so as not to leave over 3 inch opening. Top floor to be 4 inch dressed and matched maple, laid in first-class manner, driven close together, rubbed down and oil finished. As will be shown in detail drawings, part of the floor will be made in sections around gates, so as to be easily lifted up in case of repairs, said sections to be described by the City Engineer.

Sash, doors and casings to be first quality, white pine, according to details and dimensions. Front door to be veneered oak with black varnished wrought iron ornamental work as per detail. Put in a double strength glass inside of ornamental work. Large windows to be made in two parts, the upper and lower half, each part to swing on butts at top, provided with brass fasteners at bottom. Small window in vestibule to be box frame with 2 inch pulleys and cast weights hung on Russian hemp cord. All sash to be 1 $\frac{1}{2}$ inches thick. Door from main room to vestibule to be No. 1, five panel white pine door 1 $\frac{1}{2}$ inches thick, with 18 inches transom above. Base in main room and vestibule to be 12 inches of two members, with quarter-round at bottom. Door and window casing to be 4 $\frac{1}{2}$ inches wide, with corner rosettes of pattern selected by the City Engineer. Also put in one gable window, as on plan.

HARDWARE.

All door knobs and hinges to be imitation of bronze and of a pattern selected by the city engineer.

PAINTING AND OIL FINISH.

Paint all window sash and casings outside with two coats of good linseed oil and white lead. Color to be black or other to match stain work, if the Engineer so chooses.

Inside woodwork, ceiling, windows and door casings and base to be oil finished, rubbed down to a fine polish.

Finally be it understood that all work must be first-class according to specifications in every detail and in case of any controversy between contractor and inspector, as to the understanding of these specifications, the decision of the City Engineer shall be considered as final.

GATE-WELLS.

At the place of connection of the two 42 inch supply mains with the 48 inch main, 2-42 inch gates and 2-48 inch gates will be placed and two brick wells 2 feet thick must be built around and over said gates. The brickwork to be same as lower part of gate towers, set on concrete foundations. The wells to be floored over with 5 inch "I" beams with double thickness of plank flooring, 3 inches thick for bottom and 2 inch oak for top S 2 S & D & M with trap door. The wells to have iron steps set in the walls as per drawing.

BOULEVARDS—MAIN BOULEVARD.

In connection with the reservoir proper, these several boulevards will have to be graded, viz: A 100 feet wide boulevard from Central avenue to the southwest corner of reservoir site. This road must be graded its entire width and the best material selected and deposited, so as to be used for top dressing of the 40 feet wide roadway. The northerly 20 feet of this roadway will be macadamized in the following manner: After the sub-grade has been rolled with a roller weighing at least 7 tons or 233 pounds per lineal inch of width of roller, eight (8) inches of good sound stone (soap stone excepted) of such sizes as to insure a good foundation for the top dressing. These stones must be properly placed by hand and afterwards compacted by rolling.

Upon this foundation crushed rock of same quality as above specified for the foundation rock, and of such size that no stone shall exceed $2\frac{1}{2}$ inches in any direction must be placed. This rock must be sprinkled and rolled until it is thoroughly compacted and shall after rolling have a uniform thickness of 5 inches. Finally the entire surface must be covered with one inch of screenings from the crushed rock which must be wetted and rolled until the surface has become smooth and hard. All work to be done to the lines and grades given by the City Engineer. The excavated material will make the necessary fill about to station 55, from there on to the reservoir the necessary fill will have to be taken from the excavation on the reservoir site.

BOULEVARD "A".

This boulevard extends from the South property line for the entire length and will be filled by material excavated from the reservoir. The top must be neatly graded for the entire width and the north 20 feet will be macadamized as the main boulevard, with the exception that the base of the road material will be 6 inches and the top under the screenings will be four (4) inches, a cobble-stone gutter 2 feet wide will be placed along one side of this road as indicated on plan.

BOULEVARD "B."

This boulevard runs on the west line of the property and is 20 feet wide, the material to come from the excavation on the site, macadamized as boulevard "A."

The cobble-stone gutters are only to be placed in the cuts.

BOULEVARD "C."

Runs on the North side of the reservoir site and is 20 feet wide, macadamized as boulevards A and B, and gutter is put in along the outside slope of the reservoir embankment.

BOULEVARD "D."

Runs along the East line of the property with gutters as shown on plans, macadamized as boulevards A, B, and C.

The necessary material to build these boulevards and to refill the peat bog, will all come from the excavated material for the basins and from material where the boulevards are in cut, with exception of 48,000 cubic yards that will have to be borrowed outside of the excavation proper, but on the reservoir site, the material to be taken from such place as the City Engineer shall direct.

CULVERTS.

A wooden culvert 2 ft. by 2 ft. must be placed under the embankment of boulevard B—near the S. W. corner of the site, as indicated on plan. The bottom of this culvert will consist of 4-inch by 12-inch plank, 3 feet long, laid upon two stringers 6 inches by 6 inches. The walls and roof will consist of 6 inch by 6 inch timbers, securely spiked with 8-inch drift bolts, to form a workman-like and solid structure.

At or near Station 38, on the Main Boulevard, a 24-inch double strength vitrified clay pipe culvert must be put under the embankment, laid to proper line and grade, with the joints well filled with cement mortar.

COBBLE-STONE GUTTERS.

The gutters, where referred to, will consist of selected cobble-stones of from 3 to 5 inches in diameter. Whatever stone is found in the excavation of the specified dimensions must be used for this purpose, and if not found in enough quantities must be supplied from elsewhere.

The stones must be closely and well laid.

GENERAL REQUIREMENTS: CLEANING UP.

After the whole work or such parts as has been contracted for is completed, the reservoir basins and embankments shall be carefully cleaned of all refuse and rubbish. The surrounding grounds and boulevards shall also be cleaned of all scattered rubbish caused by the construction of the reservoir, and other works, and be left in a neat and presentable condition.

IMPERFECT WORK.

Any unfaithful or imperfect work that may be discovered before the final acceptance of the whole work shall be corrected immediately on the requirement of the City Engineer.

The inspection of the work will not relieve the contractor of any of his obligations to perform sound and reliable work as herein required.

INCOMPETENT HELP.

If any person employed by the contractor on the work shall appear to the City Engineer to be incompetent or disorderly, he shall be discharged immediately upon the requirement of the City Engineer, and such person shall not again be employed on the work.

ORDERS.

Whenever the contractor shall be absent from any part of the work when it may be necessary to give directions, orders will be given to the superintendent or foreman in charge of that particular work, and the orders so given must be promptly observed.

CASUALTIES.

The contractor hereby assumes all risks of floods, storms and casualties of every description.

WORK AND MATERIAL.

All the work contemplated and described in the specifications and contract shall be done to the satisfaction of the City Engineer, and all materials required and incorporated in the work of whatever description, shall be subject to his inspection and approval or rejection. And be it further understood, that any material whatsoever found unqualified for its respective use must at once be removed from the site of the reservoir or boulevard upon the orders of the City Engineer.

DEFINITION OF SPECIFICATIONS AND PLANS.

The meaning and intent of these specifications and plans shall be defined by the City Engineer and his decision shall thereupon be final and binding upon the contractor, and it is hereby understood that the plans submitted form a part of these specifications, and that if any discrepancy between plans and specifications should appear, the City Engineer shall decide as to the proper relations between the two, and his decision shall be final.

INSPECTORS AND ASSISTANT ENGINEERS.

It is also hereby understood that orders of any inspector or assistant to the City Engineer must be complied with as if issued by the City Engineer himself.

ORDINANCES.

In all the operations connected with the work herein specified, all city ordinances and all laws controlling or limiting in any way the action of those engaged on the work or affecting the materials applied to them, must be respected and obeyed.

The contractor must also comply to any or all laws that may in any way bear upon the execution of his contract as far as is related to the County of Anoka.

EXTRA WORK.

It is hereby agreed that no claim for extra work shall be made unless the same shall have been done in obedience to a written order from the City Engineer. All of such claims are to be made to the City Engineer in writing before the payment of the next succeeding monthly estimate after such work has been done.

ORDER OF WORK.

And it is further agreed that this work shall be commenced and carried out on and at such points and in such manner as may from time to time be required by the City Engineer.

ALTERATIONS.

It is also hereby agreed that the City of Minneapolis may make alterations in the lines, grades, plans or dimensions of the work herein contemplated, not greatly affecting the capacity of the basins, or quantities of work either before or after the commencement of the construction. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages or anticipated profits on the work that may be dispensed with. If they increase the amount of work such increase shall be paid for according to the quantity actually done, and at the prices established for such work, under the contract by these specifications.

DELAYS.

It is further understood that if any part of the work should be delayed by the failure of the City of Minneapolis to furnish special castings, valves or pipes, no claims for extras on this account will be allowed, as it is the City's intention to properly furnish everything of the above outlined materials.

If at any time the City Engineer shall be convinced that the work is being unnecessarily delayed, or that the conditions of the contract are being willfully violated, or executed carelessly, or in bad faith, he shall promptly notify the contractor in writing, and if his notification shall be of no effect after the delivery thereof, then in that case, he shall report the same to the City Council, who may by resolution or ordinance declare the contract null or void. The security bond shall become forfeited and the material delivered at or built into the work shall become the property of the City of Minneapolis.

ASSIGNMENTS.

The contractor shall not make an assignment of this contract without the consent of the City Council.

SPECIAL REQUIREMENTS.

It is hereby understood that the contractor must bid upon the execution of this work and carry said work out according to the following requirement with reference to qualifications of workmen and with reference to wages to be paid to men and teams.

1st. That in the performance of said contract by the contractor, no laborer shall be paid less than fifteen (15) cents per hour.

2d. That team and teamster be paid not less than thirty (30) cents per hour, all teams to be owned by Minneapolis citizens.

3d. That no men be employed except bona fide residents of the City of Minneapolis for at least one year immediately preceding such employment, and that the men so employed shall also be heads of families, or have families depending upon them for support.

The contractor must give the City Engineer permission upon demand, the right to inspect pay rolls and time books, so that he can ascertain if the above requirements are carried out.

In case the City Engineer is satisfied that the contractor is not carrying out the above requirements, he shall so inform the City Council who may declare the contract null or void, as specified under the heading *Delays*.

BOND.

An indemnity bond of 50 per cent. of the total contract price must accompany the contract. Said bond to have two sureties, citizens of Hennepin county, or it may be a surety bond, all subject to the approval of the Mayor.

CERTIFIED CHECK.

A certified check in the sum of ten thousand dollars (\$10,000) payable to A. C. Haugan, City Treasurer, must accompany each proposal, as a guarantee for the execution of the contract if awarded.

PRIVILEGE.

The contractor will be permitted to make a four (4) inch connection with the Central Avenue main at 37th Av. N. E. and use the water free of charge.

CLASSIFICATION OF WORK.

The entire work will approximately consist of the following items:

EARTH WORK.

Main boulevard—

26,000 cubic yards excavation to make fill from station 0 to 55.

21,000 cubic yards fill for balance of boulevard to be borrowed from reservoir site.

Boulevards on reservoir site—

70,000 cubic yards to be made from excavation of reservoir.

Reservoir—

68,000 cubic yards embankment made from excavation of reservoir.

35,000 cubic yards puddle made from excavation of reservoir.

70,060 cubic yards refill of peat bog made from excavation of reservoir.

27,000 cubic yards of this amount to be borrowed from reservoir site.

80,000 cubic yards of peat to be excavated and removed from site.

Accordingly there is 26,000 cubic yards excavation on main boulevard, and 264,000 cubic yards of earth excavation on reservoir site, and 80,000 cubic yards of peat excavation.

The bidder must state a price per cubic yard of earth excavation on main boulevard, said excavation to be placed in fill from station 0 to about 55, and said price to cover finishing of roadway complete and ready to receive macadam.

The bidder must state a price per cubic yard of peat excavation, this price to include hauling and filling in south part of lake due north of reservoir.

The bidder must also state a price per cubic yard for all earth excavation on the reservoir site (264,000 cubic yards) said price to include cost of filling all the boulevards, the peat bog and the reservoir embankments, the price to include pumping, baling, cleaning, grubbing, rolling, wetting, trimming, in fact everything, as before specified.

Bidder must also state a special price for preparing and putting in place the 35,000 cubic yards of puddling.

CULVERTS.

One 2 foot square wooden culvert, 56 feet long.

One 24 inch vitrified clay pipe culvert, 120 feet long.

MACADAM.

14,070 square yards macadam on main boulevard.

13,500 square yards macadam on reservoir boulevard.

9,500 square yards macadam on top of reservoir embankments.

SODDING.

14,000 square yards sodding on reservoir embankments.

2,400 square yards sodding in cuts of reservoir boulevard embankments.

COBBLE STONE GUTTERS.

1,367 square yards of cobble stone gutters.

GATE TOWERS.

Two outlet towers complete above concrete foundation.

One inlet tower complete above concrete foundation.

GATE WELLS.

One round gate well complete.

One oval gate well complete.

BROKEN ROCK LINING.

17,300 cubic yards broken rock lining.

CONCRETE PAVING.

70,900 square yards concrete paving.

STONE PAVING.

11,475 square yards of stone paving.

COPING.

740 cubic yards stone coping.

RAILING.

4,976 lineal feet of railing.

PIPE LINES WITH GATES AND SPECIALS.

Laying of 1,330 tons of cast iron pipe.

Laying of 102 tons of cast iron special pipe.

Setting of 4 12-inch gates.

Setting of 6 36-inch gates.

Setting of 3 42-inch gates.

Setting of 2 48-inch gates.

All to be furnished by the city.

Concrete around pipes and in foundation for gate towers, 1,100 cubic yards.

This is for the two (2) basins complete.

The entire work will, however, not be done this year. All the earth work will be completed, and the two basins will be lined with the broken rock. The gate houses and wells must be finished, also the boulevards and all the pipe laying, with the exception of that part of the force main which is located on the south and east side of the reservoir sites. The short part of the force main from boulevard "D" to inlet tower must, however, be laid.

TIME OF COMPLETION.

The entire work to be done this season as specified must be completed by the first (1st) day of November, 1895. A penalty of \$100 will be collected for each and every day the work remains unfinished after the first day of November, 1895.

Bidders will fill out the attached schedule, by which the most advantageous bid to the city will be determined.

PAYMENTS.

Payments will be made on monthly estimates of the City Engineer, reserving ten per cent. until the final completion of the contract.

SCHEDULE FOR BIDDERS.

26,000 cubic yards earth excavation main boulevard at.....	\$.....	per cu. yd. \$.....
264,000 cubic yards earth excavation on reservoir site at.....	\$.....	per cu. yd. \$.....
80,000 cubic yards peat excavation on reservoir site at.....	\$.....	per cu. yd. \$.....
35,000 cu. yds. puddle (for preparing and placing same) at.....	\$.....	per cu. yd. \$.....
56 feet wooden culvert at.....	\$.....	per lin. ft. \$.....
120 feet 24-inch vitrified clay pipe at.....	\$.....	per lin. ft. \$.....
14,070 square yards macadam on main boulevard at.....	\$.....	per sq. yd. \$.....
13,500 square yards macadam on reservoir boulevard at.....	\$.....	per sq. yd. \$.....
16,400 square yards sodding on reservoir site at.....	\$.....	per sq. yd. \$.....
1,267 square yards cobble stone gutters at.....	\$.....	per sq. yd. \$.....
17,300 cubic yards broken rock lining at.....	\$.....	per cu. yd. \$.....
1 inlet tower, complete.....	\$.....	
2 outlet towers, complete.....	\$.....	
1 round gate well, complete.....	\$.....	
1 oval gate well, complete.....	\$.....	
1,100 cubic yards concrete around pipes and in gate tower foundation at.....	\$.....	per cu. yd. \$.....
Lump sum for laying all the necessary pipes, and specials, setting all gates, dig and refill all trenches, etc.	\$.....	

The following is the lineal feet and tonnage of pipes to be laid:

2,736 feet of 42-inch pipe at 496 pounds per foot, equal 678.5 tons.
360 feet of 36-inch pipe at 483 pounds per foot, equal 86.94 tons.
360 feet of 12-inch pipe at 99 pounds per foot, equal 16.2 tons.
2,736 feet of 12-inch pipe at 65 pounds per foot, equal 88.92 tons.

Total..... 870.56 tons.

Total tonnage of specials..... 88.00 tons.

Gates to be set: Four 12-inch; six 36-inch; three 42-inch; two 48-inch.

In case puddling material should be required from the outside of the reservoir site, the city will furnish the borrow pit, but the contractor must excavate the material and give a price for excavation per cubic yard \$..... per cu. yd. \$.....

The contractor will also state a price per cubic yard for each 100 feet hauled beyond the reservoir property \$..... per cu. yd. \$.....

The first actual work was commenced May 22d, when a crew began grading for the boulevard. Most of this work was done with scrapers, both wheel and slushers. The total amount of earth handled from Central Avenue to Station 58 + 50, was 33,296 cubic yards excavation, which made 30,496 cubic yards embankment with a reserve for future use of 1,200 cubic yards of black dirt. The cost was:

Labor.....	\$4,816.50
Incidentals.....	81.60
Office expense.....	33.60
On account of scrapers and shovels.....	233.00

\$5,164.70

or 15.21 cents per cubic yard.

One 24-inch drain pipe and two 12-inch drains were carried under embankments at proper places, at a cost of \$254.90. As soon as grading was completed, macadamizing was commenced, and the work was done according to specifications, with exception that a special gutter was formed of selected stones, making same two feet wide and fifteen inches deep, and the thickness of the entire body of the road metal was increased, due to the condition of the ground. For the first eight thousand yards, the contract price paid to Mr. Fleetham for the stone, was \$1.45 per cubic yard for broken nine-inch rock, and \$1.55 for the 2½ inch crushed rock, and \$1.00 for screenings. The cost under these conditions per square yard was:

For material.. .. .	\$0.64
For labor, rolling and sprinkling.....	0.17
	<hr/>
	\$0.84

from which must be deducted twelve (12) cents for extra material, so as to compare with my original statement. Comparative cost 71 cents against 70 cents estimated. For the remainder of the work the contractor received \$1.75 for all rock, with the exception of screenings, where the original price was maintained.

This increased the cost to 96 per yard or an average price of 88.8 cents per square yard for all the work done. A ten ton Kelly Springfield roller was used. The price paid for roller was \$2,500.00 being the lowest bid of the following:

ROLLER BIDS

O. S. Kelly, Springfield, O., 10 ton roller.....	\$2,500.00
The Harrisburg 10 ton roller.....	2,750.00
The Aveling & Porter 10 ton roller.....	3,000.00

The bidders had to furnish their own specifications. The roller has given very good satisfaction indeed. The coal consumption for 10 hours work is about 700 pounds.

Cost of rolling per square yard was.....2.02 cents.

Cost of sprinkling.....0.54 "

Total cost of macadamizing up to Station 56+15, was \$11,845.37.

As the fill at this point kept on settling, macadamizing was stopped so as to give the fill a chance to settle over winter.

The average crew grading consisted of 11 teams and 18 men. The average crew macadamizing consisted of 15 men. In the beginning of the month of June, work was commenced, disposing of the peat bog in basin No. 2, and excavation in Basin No. 1 was commenced simultaneously.

The peat bog contained a surface area of about 5½ acres near the extreme northerly portion of the site covering the north ½ of Basin No. 2. The first move made was to construct a ditch from the peat bog in a roundabout way to Mud Lake, lying north of the site with a surface water elevation of 285. The lowest part of the peat bog being at an elevation of 274. It was necessary to put in a centrifugal 8 inch pump to raise the water in the bog into the ditch. A main ditch was carried across the bog and smaller transverse ditches dug intersecting with this.

201b. Peteler track was then carried across the bog from north to south, using two tracks laid on the planks on the bog and one track on high ground north of bog, with two tracks from this place extending north towards the lake.

The Peteler cars were operated by a 20 horse power hoisting engine. When work had well commenced from the east side, the arrangement was duplicated from the west side with another engine and tracks. Teams were also put to work around the edges to good advantage.

There were removed 80,792 cubic yards, at a cost of 16.3 cents per cubic yard, and a total of \$13,137.00, divided as follows:

Labor and teams.....	\$10,764.25
Cars	689.10
Track.....	161.50
Engines and engineers.....	416.75
Ditching and pumping.....	400.00
Office expenses.....	88.90
Incidentals, chains, sheaves, wire rope, etc....	216.50
Lumber, for sheathing in ditches and support of tracks in excavation, as well as on dump, etc.....	400.00
	<hr/>
	\$13,137 00

This work was executed very satisfactorily. The greatest trouble was experienced with the disposal of the peat. This material would slide, it would not stand up, would not carry any load, and had to be shoveled over and over again on the dump. Where teams could work it was disposed of somewhat cheaper than with the car work, owing to a better chance for wasting. The peat was also used for fuel with coal for the boilers. After the work had commenced the question of water for all purposes became a serious problem. Water for the work on the boulevard was supplied from the main on Central avenue, and for the peat bog work water was obtained by digging shallow wells on the shore of the lake north of the property. This water became, however, unfit for drinking purposes, so it became necessary to get good water from some other source. The specifications granted any contractor the privilege to tap the Central avenue main for this very purpose, but as the distance to this main where a supply could be relied on was about one and one-half miles and it would be necessary to put in a force pump and lift the water about 100 feet. I thought it advisable to try and find water by sinking a well on the site. This was accordingly done.

A contract was let to S. Swansen for \$2.25 per foot to put in an eight inch pipe. We expected to get water within 300 feet but had to go 543 feet, where we obtained first class water that came within 180 feet of the surface. A deep well pump 7½ inches by 24 inches was purchased and a 6 inch suction pipe put down, using 5¾ inch working barrel for the pump. A 40,000 gallon railroad tank was erected, about 14 feet above ground adjacent to the pump, which was neatly housed. A first class boiler, 36 inches by 84 inches, upright, was bought for \$123.00 second hand, but as good as new, it having been used only one week. This plant worked admirably, and will, of course, be used until everything at the reservoir is completed.

PLATE 8. RESERVOIR NO. 2 LOOKING NORTHWEST





The detailed cost of the "Little Water Works" is as follows:

8 inch driven well, 543 feet deep.....	\$1,086.00
6 inch suction pipe, 238 feet 10 inches long.....	113.34
One 5¼ inch working barrel, complete with wooden plunger rod	110.00
Labor	28.40
One 7½ inch by 24 inch upright pump	190.00
Tank, 16x22 feet.....	288.00
Lumber in trestle for tank.....	46.62
Stone for foundation for tank....	19.15
One 36 inch by 84 inch boiler.....	123.00
Fittings for pump, boiler and tank.....	84.50
Building trestle and foundation, making connections, etc.....	69.00
Pump house.....	82.50
Office expense.....	37.40
Hose and couplings.....	36.00
	<hr/>
	\$2,313.91

This pump will raise into the tank about 80 gallons per minute with one hundred pounds steam.

Meanwhile work had progressed on the entire site, all surface material containing vegetable matter was removed and put into the boulevard embankments and the black dirt piled up for future use to cover outside of banks for sodding purposes.

The excavation for Basin No. 1 was well under way. A great deal of the first excavated material was deposited in boulevard A, and in the main boulevard from the reservoir site to station 58+50. Wheel scrapers, wagons, slushers, and Peteler car work with horses were used until the peat had all been excavated in No. 2, when the two hoisting engines were pulled off from the north side and placed on the dividing embankments between the two basins, each engine using two tracks for excavating and two tracks for refilling peat bog. In the beginning, some trouble was experienced in making the foreman do the refilling in four inches to six inches layers, but after awhile it was done satisfactorily, and practically very little trouble was experienced in moving the tracks on the fill continuously. The material was sprinkled and rolled with corrugated 5,000 pound rollers, made by Pope, of St. Louis. The cost of rollers was \$345.00 F. O. B. St. Louis. These rollers did admirable work, as I occasionally tested their work by using the ten-ton steam roller, and by digging pits to examine the strata of the fill. The material generally was of a very good quality,—a sandy clay, some red, some yellow, and some blue. All boulders and stones over three inches in diameter were removed, to be used later in finishing work of gutter construction. The embankments were carried up with slopes two to one on the inside and two to one on the outside, where adjacent basins will be constructed in the future; in other places outside slopes were built one and one-half to one. Puddle walls of clay were carried up from good bottom to top in embankments. Puddle material existed in abundance, and pug mills, although provided for, were found unnecessary. The puddle material was brought to the trenches by scrapers or wagons, and rammed in place with long-handled oak rammers, weighing about ten pounds. The puddle walls thus constructed were tested with a ten-ton steam roller. All embankments were built in four to five inch layers.

Toward the close of the season track work was found impracticable, and wheel scrapers and wagons were used exclusively. During August and September there was a scarcity of teams, in fact none extra were to be had, and when chilly weather commenced, we had to build stables for the teams to keep them.

The total amount of earth excavation on the reservoir site outside of peat excavation was as follows:

In Basin No. 1.....	183,389	cubic yards earth.		
In Basin No. 2.....	34,451	"	"	"
In Basin No. 3.....	28,939	"	"	"
Near No. 1.....	539	"	"	"
In Steps.....	241	"	"	"
In puddle trenches.....	1,980	"	"	"
In ditches.....	6,178	"	"	"
In gate wells.....	183	"	"	"
For pipes, gates, and Tower foundation.....	4,935	"	"	"
In Boulevard "B".....	1,383	"	"	"
In Basin No. 4.....	2,870	"	"	"
	<hr/>			
	265,088	"	"	"

This excavation made the following embankments:

Boulevard fill.....	89,316	cubic yards, contains part of peat refill.		
Peat bog refill.....	53,085	"	"	
West embankments of Basins	45,811	"	"	
North embankment of Basins	3,574	"	"	
East embankment of Basins	22,487	"	"	
South embankment of Basins	7,595	"	"	
Puddle walls.....	13,264	"	"	
Refill Basin No. 1.....	861	"	"	
Black dirt saved.....	3,400	"	"	
Poor material wasted.....	3,000	"	"	
Refill ditches.....	3,617	"	"	
Wasted ditches.....	1,443	"	"	
	<hr/>			
	247,453	"	"	

The amount of material in the boulevard is distributed as follows, and placed at the various prices given below:

In main boulevard from Reservoir to Station 58+50:

18,086 cubic yards at \$0.11.....	\$1,989.46
Fill in Boulevard "A" 35,633 cubic yards at \$0.11.....	3,919.65
Fill in Boulevard "B" 7,519 " " " 0.25.....	1,879.75
Fill in Boulevard "C" 9,320 " " " 0.16.....	1,491.20
Fill in Boulevard "D" 14,505 " " " 0.18.....	2,610.90
Fill in Boulevard "A" 2,870 " " " 0.19.....	539.75
Cut in Boulevard "B" 1,383 " " " 0.081.....	111.75
	<hr/>
89,316	\$12,542.44

Average price per cubic yard, 14 cents.

To determine the cost of the work per cubic yard in excavation of the 253,792 yards which made the boulevards, the peat bog, refill, the embankments of the reservoir, in fact, which made all the work, specified in the specifications under heading "CLASSIFICATION OF WORK," "Earth Work on Reservoir site, we have:

89,316 cubic yards excavated for boulevards.....	\$12,542.44
19,619 cubic yards excavated, borrowed for basin embankment, and 144,857 cubic yards excavated for basin embankment and peat bog refill.....	59,338.54
To pumping and ditching for peat bog refill.....	400.00

To pumping and ditching for basin No. 1.....	300.00
To general ditching and care of storms.	584.25
Extra cost, handling frozen material.....	618.00
Accident account.....	204.00
Car repairing.....	233.00
Office expense.....	524.72
Sundry expenses on account of general labor, general teaming, watching, water, carpenter work, blacksmith work, etc.....	1,275.00
Coal.....	229.00
Car repair supply.....	267.05
Rails and switches, bought of Winston Bros.....	750.76
Track incidentals.....	91.15
Charge to corrugated rollers.....	690.00
Charge to scrapers.....	600.00
Blocks and sheaves.....	73.00
Shovels.....	200.00
Bolts, nuts, iron, etc.....	86.44
Steel and iron for blacksmith work.....	400.00
Chains.....	22.00
Wire cable and ropes.....	264.14
Oak poles.....	27.58
Scraper wheel.....	12.00
Stables.....	260.00
Lumber.....	220.00
Grease and oil, picks, handles, blacksmith tools, plows, freight, mattocks, etc.....	729.89

\$80,942.96

Less \$750.76 for rails sold back to Winston Bros..... 750.76

\$80,192.20

Or 253,792 cubic yards at 31.2 cents per cubic yard against estimated 38 cents.

The cold weather set in at the end of October and the work was carried on as long as safe, even at an additional cost in handling frozen material which was practically wasted.

There yet remains in earth work to be done

About for West Embankments.	4,190	cubic yards.
For North Embankment No. 2.....	4,200	" "
For East Embankment No. 2.....	18,240	" "
For middle Embankment.....	5,621	" "
For refill in No. 2.....	4,000	" "
For puddle.....	3,961	" "
	<hr/> 40,212	" "

of which 22,870 cubic yards is available in No. 1, and 5,247 yards is available in No. 2, from trimming of the banks.

There also yet remains to be done

Fill on Boulevard "B".....	4,004	" "
Fill on Main Boulevard.....	4,320	" "

which necessitates borrowing 20,419 cubic yards.

As soon as was found practicable, work was commenced excavating for gate towers, valves and pipe connections. This work was quite expensive as the cuttings run up to 30 feet and considerable bracing had to be used. The total amount excavated was 4,935 cubic yards at a cost of \$0.60 per cubic yard.....\$2,961.00 and in addition to this—

1,300 cubic yards was put in as extra puddle, 2,578 cubic yards total puddle at \$0.55..... 1,417.90

Excavating of trench for 42 inch main from Outlet tower No. 1, to gate wells, a distance of about 430 feet cost.....	\$778.50
Lumber.	214.10
Rubber boots.....	30.00
Setting of 4 12-inch gates, 6 36-inch, 3 42-inch and 2 48-inch gates, laying and connecting up with same. 104 tons of specials and 83 tons of 36-inch pipe and 123 tons of 42-inch and about 34 tons of 12-inch.....	1,299.23
Hauling from yards of 307 tons at \$1.36 per ton...	417.38
Office expense	44.20
Incidentals.....	112.20
	<hr/>
	\$7,274.51

To compare with bid on this work as per specifications, deduct for puddling.....	\$715.00
And for handling.....	417.38
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	1,132.38

Comparative cost.....	\$6,142.13
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which is satisfactory, as about 628 tons of straight pipe is to be laid which can be done for \$3,000 00 including trenching.

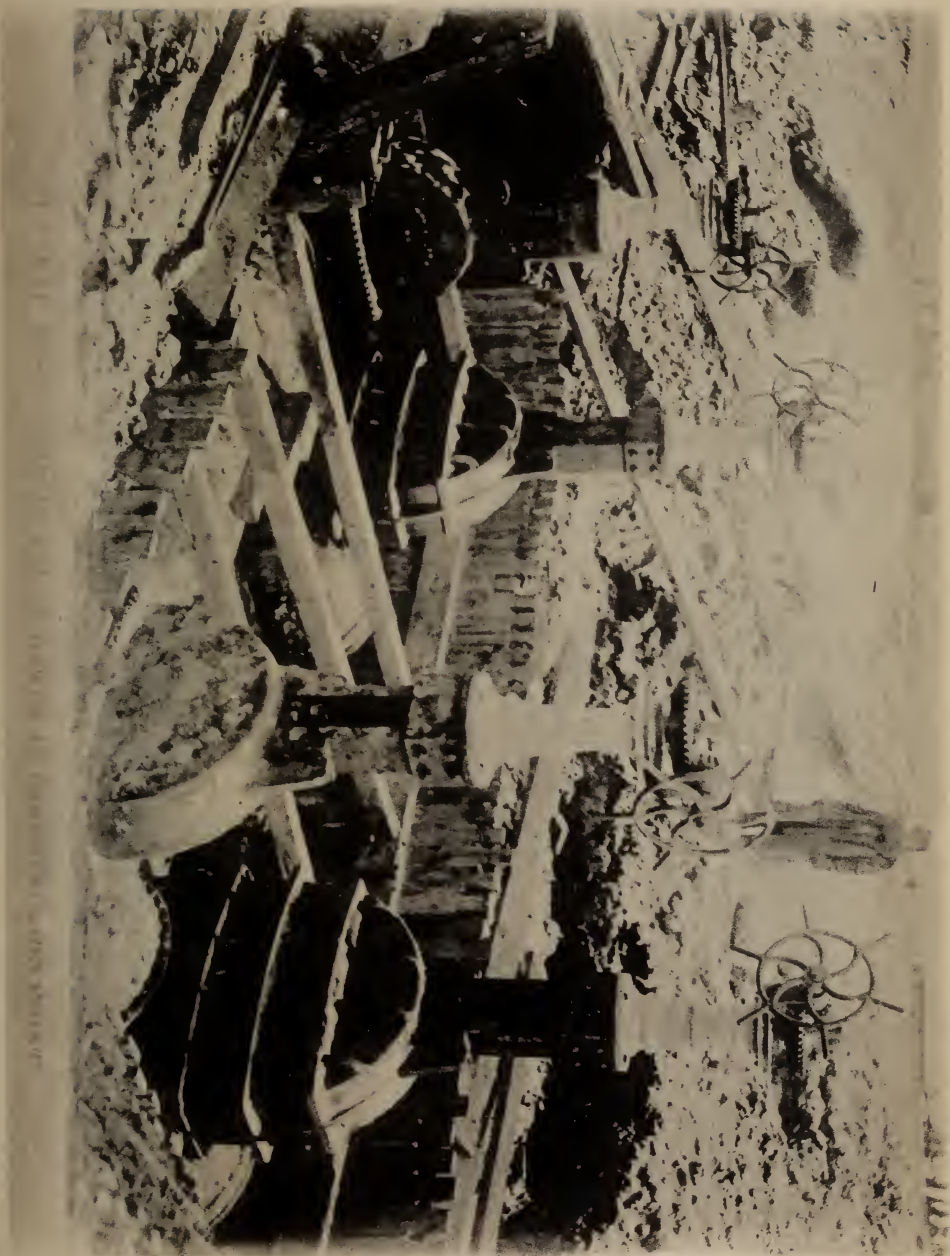
SPECIALS, PIPES AND GATES.

The special castings were made in Minneapolis, although some of the castings run up in weight to 11,030 lbs. and were the first of this kind and size to be made here. The price paid was \$54.00 per ton. The Twin City Iron Works were the contractors.

In April, bids were received for about 800 tons of 42 inch pipe, and the low bid of \$19.60 per ton was made by the Michigan Penninsular Car Works of Detroit. It was, however, decided to buy only what was absolutely necessary to go on with the earth work, hence only 104 tons were bought at this price. Later on eighteen tons more were required, and obtained at \$24.30 from the same firm, which also sold us sixteen tons of 12 inch at this price. Seventeen tons of 12 inch pipe was bought of Dennis Long & Co., for \$19.74, which was the contract price for the season extension work. Bids were also received during the season for 6,000 tons of 48 inch pipe, but as the lowest price was \$24.00, it was decided to wait till next year for further pipe buying, as there was no immediate need of pipe, anyhow. The valves were bought upon general specifications, the bidders being obliged to furnish their own drawings and specifications in addition. The contract was awarded to the Eddy Valve Company, Waterford, N. Y., at the following prices:

4	12 inch valves at	\$ 32.00
6	36 " " "	380.00
3	42 " " "	580.00
2	48 " " "	870.00

Gear stands, including threaded stems and couplings, for the 36, 42 and 48 inch valves, \$60.00 each additional. Shafts for connecting valve stems to gear stand stems at \$1.50 per foot, including boxes, and steel couplings shafts, for the 12 inch valves, at 50 cents per foot, and indicator stands, for the 12 inch valves, \$25.00 each. The



specials and pipes were contracted for under the city's standard specifications for water pipe, which are the same as adopted by the American Waterworks Association. The total money expended so far is for:

Valves.....	\$6,064.00
Specials.....	6,461.91
Pipe.....	3,018.21
Pig lead, 6,044 tons.....	418.09
Gaskets and sundries in connection with gates..	76.65
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	\$16,238.86

The 42 inch pipe was inspected by R. W. Hunt of Chicago, and the Dennis Long 12 inch pipe by Mr. Holmboe of Louisville, who did the inspection for the season's regular water pipe.

CONCRETE WORK.

The pipes were all laid in concrete under the embankments with cut off walls. There was used for the pipes and foundation of—

Inlet tower.....	280 cubic yards.
Outlet tower No. 1.....	449 " "
Outlet tower No. 2.....	476 " "
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	1,205 " "

1,205 cubic yards at \$4.33 per cubic yard.....	\$5,217.65
Office expense.....	36.47
* Incidentals.....	80.40
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	\$5,342.52 or

\$4.43 per cubic yard.

The 2½-inch broken stone cost \$1.75 per yard. Milwaukee cement was used at a contract price of 76½ cents per barrel, but this price was somewhat increased, due to loss of sacks and extra for special delivery.

The sand cost 50 cents per cubic yard, it being found in the woods North of the Reservoir site. The concrete was very thoroughly rammed. The mixing was done by hand. Proportion used 1, 2, and 4. In connection with the two gate wells at the South West corner of the reservoir site, 62 cubic yards of concrete were used for the foundation of the wells. The 42 inch main running from the Outlet Tower No. 1, to gate wells was not laid in concrete from a point 35 feet from Outlet Tower.

The cost of the gate wells was—

62 yards concrete at \$4.33.....	\$ 268.46	} per 1000 brick \$12.22.
Brickwork, 58, 655 brick at \$6.43.....	387.19	
Labor.....	181.50	
Cement 161.5 bbls. at 78 cents per bbl.....	125.97	
Sand.....	21.00	
Iron manholes.....	26.40	
Office expense.....	7.00	
Incidentals.....	18.00	

Total cost.....	\$1,035.52
Estimated cost.....	1,300.00

The design of gate wells was changed in the construction of the cover. This was originally a double plank floor on "I" beams. I changed same to brick arches on the "I" beams and covered them with concrete to receive a macadam surface. As soon as the pipes

and gates had been placed and the gate tower foundations were built, the towers proper were constructed. Above ground they are made of Lake Superior brownstone, finished off with Spanish roof tiling; below grade, of brick. The brownstone was contracted for in the rough at a price of 52 cents per cubic foot and sawed in 4, 8 and 12 inch slabs at 72 cents, and was cut by day labor as union work. The cutting cost too much and is the cause of increasing the cost of the towers above the estimate, but then the cutting was excellently done and more labor put in the work than any contractor would have done.

Detailed cost:

	Inlet Tower.	Outlet Tower No. 1.	Outlet Tower No. 2.
Brick, 40,500 @ \$6.50, 22,902 @ \$6.43.....	\$410.52	56,674 @ \$6.43.. \$364.41	57,724 @ \$6.43.. \$371.16
Cement, 161 bbls @ 78c....	125.58	156 bbls 121.68	139 bbls 108.42
Sand	20.00	19.00	15.00
Labor.....	334.76	299.23	304.51
Stone, 3,871.5 cu ft. sawed and 84.4 rough for the 3 towers.....	944.92	944.92	944.93
Switching charges.....	32.50	32.50	32.50
Stone cutting "	753.50	635.00	753.50
Labor.....	90.00	90.00	90.00
Hauling stone to reserv'r	70.00	70.00	70.00
Carpenter work.....	43.75	.....	43.75
Iron work.....	44.55	44.55	44.55
Building towers.....	467.13	.....	467.12
Brick.....	106.73	.....	100.43
Cement.....	46.80	.....	54.60
Floor	10.40	.....	10.40
Lumber in roof, etc.....	61.77	.....	61.77
Office expense.....	25.90	19.11	25.42
Incidentals.....	62.60	26.00	81.20
Totals.....	\$3,651.41	\$2,666.40	\$3,579.26

Inlet tower and outlet tower No. 2 are practically complete. A contract, in the sum of \$780.00, was let to the Northern Hydraulic Pressed Brick Company, for the tiling, with Spanish tile, of the three towers. The tiling is now being put in place. Outside of the regular work contemplated under the specifications, it was found necessary to construct two drains outside of the reservoir site to prevent accumulation of water outside of the embankments, one on the northeast side, and one on the southwest side. The northeast drain is a twelve inch sewer 656 feet in length, with two man-holes draining into the lake before referred to.

Cost of pipe	\$207.90
Cost of brick	22.82
Cost of cement	8.58
Labor	1,317.50
Office account.....	11.00
Incidentals	26.20

\$1,594.00

Or \$2.37 per foot. The cutting was very heavy. The southwest drain is connected up with the drain from basin No. 1, so this can be drained until the drains proper are put into place.

The total length of drain is 798 feet, of which the sewer pipe 12 inch—

Cost.....	\$164.24
Labor.....	990.00
Lumber.....	100.00
Office account.....	15.82
Incidentals	37.40

\$2,307.46

Of this amount \$300.00 has been charged against basin No. 1, leaving the cost charged against the southwest sewer \$2,007.46.

As the embankments are not finished and trimmed off, the lining could not be put on, but stone for that purpose, and for the concreting of the basins, is now being hauled in place. The 16th day of December, 7,504 yards were placed and paid for, to Mr. J. Fleetham, at \$1.75 per cubic yard. To get better and nearer track facilities, Thirty-ninth avenue northeast was graded from Central avenue to the rolling mill, at a cost of \$368.75, or about 11 cents per cubic yard.

The following table shows all the work done in a condensed form:

WORK DONE AND MONEY EXPENDED ON THE NEW RESERVOIR.

	Actual amt't of work done.	Actual cost.	Total cost.	Est. am't to be done 1895.	Estim'd cost.	Contractor's		Remarks.
						Lowest bid.	Highest bid.	
Main boulevard, earth excavation	33,296 cu. yds.	@10.1521	\$5,164.70	26,000 cu. yds.	\$0.20	\$0.145	\$0.18	Completed. Original amount in- creased on acct change grade. Work not completed. Total am't will be increased. Impossible to be done for lowest bid.
On reservoir, earth excavation....	253,792 "	0.312	80,192.20	204,000 "	0.38	0.215	0.41	
" " peat bog excavation	80,792 "	0.163	13,137.00	80,000 "	0.15	0.125	0.40	Completed. Total amount decreased.
For preparing and placing puddle	10,686 "	0.567	6,066.70	35,000 "	0.45	0.25	0.60	Not completed.
24-in. vitrified clay pipe on boul...	122 lin. ft.	1.35	164.70	120 lin. ft.	1.75	1.20	1.75	Completed.
12-in. " "	270 "	0.334	90.20	None estim't'd	0.70	0.575	0.75	Completed.
Macadam on main boulevard.....	13,258 sq. yds.	0.888	11,845.37	14,070 sq. yds.				Part of this work was done based upon specified thickness for 71 cents per yard, but as thick- ness was increased 1-5 and con- tractor's price increased from \$.45 for broken rock to \$.75, and from \$.55 to \$.75 for crush- ed rock, the average price is 88 8-10 cents.
Screenings for sidewalk on boul...	217 cu. "	1.00	217.00	None estim't'd				As banks are not ready, stone is being delivered for future work Completed.
Crushed rock for lining and con- creting of basins	7,504 "	1.75	13,132.50				5.50	Contract not yet accepted. Practically all laid.
Concrete around pipes and in gate towers	1,205 "	4.434	5,342.52	1,100 cu. yds.	4.25	2.85		
Valves—4 12 in., 636 in., 3 42 in., 2 48 in. Specials.	Delivered. 119,665 tons.		6,044.00	As given	6,800.00	6,752.00		
Cast iron water pipe—480 ft. 12 in.. " " " " " "	15,895 "	54.00	6,461.91	88 tons.	40.00	54.00		
" " " " " "	17,716 "	24.30	386.20	105.12 "	20.00	24.30		
" " " " " "	104,042 "	19.74	349.71			19.74	27.50	It was deemed advisable to lay only such pipe as was abso- lutely necessary in connection with the construction of the embankment this season.
" " " " " "	18,094 "	19.60	2,042.60	678.5 tons.	20.00	19.60		Transferred from general water works.
372 ft. of 36 in., 108 ft. of 12-in. pipe and 239 lbs. caulking rope.....	87,000 "	24.30	459.70	86 tons.	On hand	24.30		

Laying and setting all above valves, specials and pipes, excavating, refilling and puddling all ditches, etc.....	7,274.51	.....	9,530.00	6,500.00	9,640.00	Estimates and bids were on totals; balance will be done inside of estimate.
Pig lead—6,044 tons \$418.09; gaskets and sundries, \$76.05.....	404.74	.....	.....	.....	.....	} Absolutely impossible to build for lowest bid. Estimate over-run, due to cutting stone by day labor.
Inlet tower.....	3,651.41	{ Sh'd have	3,200.00	2,000.00	3,800.00	
Outlet tower No. 2.....	3,579.26	{ been c'ptd }	3,200.00	2,000.00	3,800.00	
Outlet No. 1.....	2,866.40	.....	3,200.00	2,000.00	3,800.00	Completed.
Two gate wells.....	1,035.52	.....	1,300.00	1,000.00	1,250.00	
Pumping plant—545 ft. of 8-in. well, 40,000-gal. tank deep well pump, etc., complete.....	2,313.91	.....	.....	.....	.....	No special provision originally.
N. E. sewer for special drainage outside basins.....	1,504.00	.....	.....	.....	.....	Not originally contemplated.
S. W. sewer for special drainage outside basins.....	2,090.46	.....	.....	.....	.....	Not originally contemplated.
Grading 39th avenue N. E.....	368.75	.....	.....	.....	.....	To give access to better sidetrack facilities.
Tools on hand and buildings, Bonds and insurance.....	5,245.00	.....	.....	.....	.....
Engineering and inspection.....	164.25	.....	.....	.....	.....
Rails bought from Winston Bros. that will be sold again to said firm for about the original price.	2,148.67	.....	.....	.....	.....
to-wit.....	750.76	.....	.....	.....	.....
	<u>\$184,474.15</u>					

Before the work was commenced, the reservoir committee agreed upon the following schedule giving the number of men and teams that should be allowed to each ward, based upon the total number of men at 300 and teams 75. The crew was, however, increased during the season, so that at one time there were employed 550 men and 150 teams.

Below is a list of the wards showing how many names were filed in my office by the aldermen, and how many notices were sent out from my office, and also how many men and teams were employed from each ward :

WARD.	Total number of names on Aldermen's list.	Total number of notices sent.	Number of teams employed.	Number of men employed.
First.....	305	216	34	140
Second.....	83	81	20	48
Third.....	449	306	31	142
Fourth.....	181	166	26	63
Fifth.....	69	64	12	32
Sixth.....	381	242	12	126
Seventh.....	114	102	9	44
Eighth.....	74	71	10	27
Ninth.....	424	183	28	116
Tenth.....	114	61	10	34
Eleventh.....	221	153	15	68
Twelfth.....	126	75	10	40
Thirteenth.....	45	44	7	20
Country.....	0	6	7	0
Totals.....	2,586	1,770	231	900

Of the total expenditures of \$184,474.15, \$116,725.21 was expended for labor, and \$2,729.09 for hiring of cars, engines and tracks. On the whole, the work was carried on satisfactorily, although, generally speaking, a contractor would probably have had a better class of men. The men employed were, however, married men, and in most cases with large families, and single men were only employed when somebody depended upon them for support. Ten hours constituted a day's work. Men received \$1.50 per day and teams \$3.00 per day. From October 10th, nine hours constituted a day's work, wages remaining the same. The work in total, of course, cost considerable more than if it had been given to the lowest bidder, but on the other hand, the cost is well under my estimate, and the work has been done in a thorough manner throughout, absolutely according to specifications, and where improvements could be made on same, it was done.

Engineering, stationery and printing cost \$2,147.94. Of the following list of tools and machinery on hand, including sheds, etc., \$5,245.00 has been credited against the cost of the work, which was very low.

TOOLS ON HAND AT THE RESERVOIR.

Shovels.....	416
Picks.....	111
Crow bars.....	14
Mattocks.....	51
Wooden mauls.....	5
Iron mauls.....	1
Sledge hammers.....	1

Track hammers.....	7
Claw bars.....	4
Snatch rigs.....	5
Cross-cut saws.....	2
Sand screens.....	2
Chains.....	4
Vices.....	2
Scythes.....	2
Axes.....	9
Wheel scrapers.....	52
Slushers.....	23
Wheel barrows	27
Plows	14
Monkey wrenches.....	7
Mortar hoes.....	12
Clevises, 2½ inch.....	5
Hand saws.....	2
Grindstones	2
Lanterns.....	6
Rubber boots, hip, pairs.....	5
Rubber boots, knee, pairs	13
Wire brushes	3
Paving hammers	4
Stone hammers.....	4
Mason hammers.....	4
Hand axe.....	1
Level, 3 foot mason's.....	1
Y level.....	1
Spoke auger.....	1
Steam road roller	1
Corrugated rollers.....	3
Pug mills.....	2

TOOLS IN BLACKSMITH SHOP.

Large drill frame	1
Drills	15
Forge	1
Anvil	1
Hammers.....	4
Swages.....	40
Cold chisels.....	6
Punches	6
Bolt headers.....	6
Traveler.....	1
Die plates.....	2
Taps.....	13
Dies.....	13
Tongs, pairs.....	6
Blower	1
Dash-board lantern.....	1

STONE-CUTTERS.

Wedges.....	17
Claw bars.....	2
Shovels.....	2
Sledge.....	1

Outside of these tools, the following articles are on hand:

- 4 42-inch 1-16 bends, cast iron specials.
- 1 42-inch $\frac{1}{4}$ bends.
- 2 12-inch bends.
- 8 12-inch 12-ft. long water pipe.
- 2 36-inch bell mouths specials.
- 102 sacks of cement.
- 871 brick and all the brown stone for tower No. 1.

To finish the reservoir there yet remains to be done the following:

Main boulevard.....	\$1,150.00
Reservoir boulevard.....	8,775.00
Top of embankments.....	6,175.00
Sodding.....	2,050.00
Gutters.....	380.00
Embankments.....	10,815.00
Puddle.....	2,240.00
Grading.....	1,260.00
628 tons of pipe at \$24.00.....	15,072.00
Laying same.....	3,500.00
Paving	32,462.00
Coping.....	9,434.00
Railing.....	8,708.00
Concrete	50,000.00
Stone for lining....	16,600.00

\$168,621.00

For pipes in connection with filter..... 13,000.00

\$181,621.00

Expended..... 184,474.00

\$366,095.00

which is as originally estimated, exclusive of cost of Main Boulevard.

In connection with the reservoir work, close tab was kept on the river water, chemical analysis being made about every two weeks by Mr. Meads. The following table gives all the analyses from February to December 30th.

ANALYSES. PARTS PER MILLION.

DATE.	Source of Sample.	Grains per Gallon.		Chlorine.	Hardness.	Oxygen Consumed.			Free Ammonia.	Albuminoid Ammonia.	Nitrogen as Nitrites.	Nitrates.	Remarks.
		Volatile Residue.	Fixed Residue.			10 Min.	60 Min.	10 Min. boiling.					
February 27.....	North.....	4.31	9.80	1.35	7.0	.80	1.15	4.75	0.072	0.145	Trace	.22	Yellowish color solids, blackened up on heating.
March 15.....	".....	4.60	8.98	1.45	6.5	.68	1.02	.92	0.054	0.118	None	.25	
March 29.....	".....	4.07	6.71	1.00	6.5	.56	1.01	3.94	0.068	0.152	"	.17	
April 9.....	West.....	4.95	5.54	1.00	6.0	0.97	1.28	2.49	0.060	0.356	"	Trace	
April 19.....	East.....	4.66	5.60	1.50	6.0	0.67	1.25	2.68	0.078	0.372	"	"	
April 19.....	North.....	4.72	5.48	1.50	6.0	0.63	1.35	2.68	0.072	0.353	"	"	
April 30.....	West.....	4.49	5.85	1.00	6.5	0.64	1.24	3.40	0.078	0.28	"	"	
April 30.....	East.....	4.65	5.83	1.50	6.5	0.64	1.24	3.12	0.078	0.382	"	"	
April 30.....	North.....	4.31	10.20	1.50	6.5	0.61	1.20	2.96	0.078	0.302	"	"	
May 13.....	West.....	4.67	11.08	1.20	6.5	1.63	2.72	6.56	0.120	0.361	0.0003	0.13	Deep yellow solids blackened.
May 13.....	East.....	4.90	6.41	1.40	6.5	1.35	2.36	6.16	0.117	0.424	0.0003	0.13	
May 13.....	North.....	5.01	5.80	1.31	6.0	1.56	2.64	6.64	0.117	0.426	Slight	Trace	
May 27.....	West.....	4.96	4.72	1.20	6.0	2.60	3.71	7.12	0.054	0.397	"	"	
May 27.....	East.....	5.01	5.25	1.20	6.0	1.77	3.22	6.95	0.054	0.421	"	"	
May 27.....	North.....	5.02	4.66	1.60	6.0	1.93	3.50	6.80	0.050	0.431	Faint	0.25	
June 11.....	East.....	5.36	3.27	1.20	5.0	3.08	6.00	11.40	0.066	0.25	"	0.25	
June 11.....	West.....	4.84	3.03	1.40	5.0	2.72	5.68	10.16	0.066	0.302	"	0.25	
June 11.....	East.....	5.30	3.21	1.30	5.0	3.40	6.00	11.20	0.064	0.317	"	0.25	
June 25.....	North.....	5.36	2.88	1.40	5.0	5.52	7.44	13.92	0.112	0.356	Very faint	0.33	
June 25.....	West.....	5.48	2.92	1.20	5.0	5.52	7.80	14.24	0.128	0.394	"	0.33	
June 25.....	East.....	5.48	2.68	1.20	5.0	5.72	7.80	14.60	0.104	0.410	"	0.33	
July 9.....	North.....	5.13	2.97	1.00	5.0	5.48	7.96	13.84	0.062	0.364	None	0.25	
July 9.....	West.....	5.18	2.92	1.00	5.0	5.56	8.64	14.24	0.126	0.420	"	0.25	
July 9.....	East.....	5.19	2.74	1.00	5.0	5.44	8.60	14.60	0.080	0.410	"	0.25	Very deep yellow and solids.
July 30.....	North.....	4.84	3.91	1.00	5.0	5.80	6.40	11.52	0.080	0.504	"	0.17	
July 30.....	East.....	5.36	3.50	1.20	5.5	4.56	5.56	12.28	0.090	0.343	"	0.17	
July 30.....	West.....	5.25	3.50	1.00	5.5	4.16	6.36	11.84	0.093	0.336	"	0.17	
August 14.....	North.....	4.65	5.03	1.00	5.0	4.48	6.52	11.36	0.078	0.40	"	0.14	
August 14.....	East.....	4.95	5.01	1.00	5.0	4.64	6.72	11.60	0.102	0.451	"	0.14	
August 14.....	West.....	4.81	5.01	1.40	5.0	4.81	6.72	11.72	0.070	0.427	"	0.14	
August 28.....	North.....	4.37	5.05	1.00	5.0	2.72	4.20	9.24	0.042	0.202	"	0.13	
August 28.....	East.....	4.37	6.30	1.00	5.0	2.72	4.32	9.60	0.068	0.218	"	0.13	
September 14.....	West.....	4.90	6.12	0.80	6.0	1.99	3.36	7.12	0.098	0.336	"	Trace	
September 14.....	North.....	4.90	6.24	2.00	6.0	2.43	3.49	7.28	0.134	0.437	"	"	
September 14.....	East.....	4.78	6.30	0.80	6.0	2.24	3.86	7.20	0.078	0.394	"	"	
October 4.....	North.....	4.20	6.82	1.00	6.0	1.75	2.83	7.52	0.094	0.319	"	"	
October 4.....	West.....	4.54	6.53	1.20	6.0	1.67	2.82	7.00	0.102	0.336	"	"	
October 4.....	East.....	4.66	6.65	1.19	6.0	1.79	2.73	6.28	0.09	0.370	"	"	
October 17.....	North.....	4.79	6.00	1.20	5.5	2.63	4.08	9.20	0.046	0.277	"	"	
October 17.....	West.....	4.96	6.41	1.20	5.5	2.66	4.16	9.28	0.055	0.269	"	"	

ANALYSES. PARTS PER MILLION—Continued.

DATE.	Source of Sample. Side.	Volatile Residue.	Fixed Residue.	Total Residue	Chlorine.	Hardness.	Oxygen Consumed.			Free Ammonia.	Albuminoid Ammonia.	Nitrogen as Nitrites.	Nitrates.	Remarks.
		Grains per Gallon.					10 Min.	60 Min.	10 Min. boiling					
October 17.....	East.....	4.84	6.35	11.19	2.00	5.5	2.89	4.36	9.92	0.085	0.307	None	Trace	Deeper yellow.
November 1.....	North.....	4.94	6.20	11.14	1.20	6.0	1.55	2.72	6.48	0.054	0.278	"	"		Very light yellow.
November 1.....	West.....	4.55	6.73	11.31	1.20	6.0	1.52	2.70	6.56	0.059	0.240	"	"	Slight color.
November 1.....	East.....	4.66	6.59	11.25	1.20	6.0	1.64	2.80	6.64	0.067	0.274	"	"		0.13
November 15.....	North.....	4.44	6.76	11.14	1.44	6.0	1.25	2.00	5.80	0.042	0.172	"	"	0.13
November 15.....	West.....	4.67	6.35	11.02	1.20	6.0	1.26	2.05	5.72	0.042	0.172	"	"		0.20
November 15.....	East.....	4.54	6.30	10.84	1.40	6.0	1.25	2.05	6.04	0.050	0.181	"	"	0.20
November 23.....	North.....	5.07	7.58	12.65	1.80	7.0	1.66	2.55	6.32	0.08	Trace	"	"		0.20
November 23.....	West.....	5.13	7.70	12.83	1.60	7.0	1.62	3.00	6.84	0.08	0.288	"	"	0.20
November 23.....	East.....	5.02	7.81	12.83	1.80	7.0	1.58	2.50	6.76	0.102	0.300	"	"		0.13
December 14.....	North.....	5.13	8.45	13.58	1.80	6.0	1.59	2.89	6.80	0.080	0.25	"	"	0.13
December 14.....	West.....	5.36	7.99	13.35	1.80	6.0	1.55	2.80	6.92	0.056	0.31	"	"		0.13
December 14.....	East.....	5.45	7.96	13.41	1.60	6.0	1.60	2.86	6.72	0.080	0.277	"	"	0.13
December 30.....	North.....	5.07	8.16	13.23	1.80	7.0	1.14	2.02	5.20	0.092	0.264	"	"		0.20
December 30.....	West.....	5.01	8.28	13.29	2.00	7.0	1.07	1.90	5.08	0.090	0.265	"	"	0.20
December 30.....	East.....	5.42	8.05	13.47	2.00	7.0	1.03	1.88	5.24	0.100	0.290	"	"		0.20

By a close scrutiny of the table, it will be found that the water during March was best, and that since then it has grown rapidly worse and that the oxygen consumption is entirely too high. By comparing the analysis of the water taken from the North Side Station with those from the West and East Side Station it is plain that the water at the Falls certainly has been at certain times contaminated by sewerage and it is also seen that whatever pollution may be in the water, appears plainly during November and December, probably on account of the extreme low water then existing. During September the chlorine is 2.00 parts at the West Side and in October 2.00 at the East Side with much less or normal chlorine at the other stations. This certainly indicates sewerage contamination and Dr. Hewitt, Secretary of State Board of Health, at that very period found *bacillus coli communis*, in the water, and at once considered the supply very suspicious and gave the public to understand that the river water should be boiled before being consumed. As is well known the *bacillus coli communis* keeps close company with the typhoid bacillus, and is of the pathogenic order.

Steps have been taken to get the various filter companies to come here and erect experimental filters at the East Side Station, but as the Committee on Water Works did not see any particular need of hurrying this matter, it was temporarily postponed. I, however, beg your honorable body not to let this matter be postponed too long, as this part of the work certainly is of the most important character and rather too much time and expense should be given the subject, than too little.

WATER WORKS.

During the season 11.88 miles of watermains were laid, ranging in size from 6 to 24 inches, on general extensions, making a total mileage of 233.72. Price paid for pipe in the open market was \$19.74, or some \$3.00 a ton less than the lowest price offered when bids were advertised for. The pipe was furnished by Dennis Long & Co., of Louisville, Ky. Ten miles are ordered for 1896. The specials cost \$33.50 per ton. 122 single stream hydrants and 8 double stream hydrants were set. The hydrants were manufactured in St. Paul, by the Northwestern Wheel and Foundry company, and were delivered f. o. b. Minneapolis for the extremely low price of \$21.24. They are, as are all in our city, of the Mathews pattern, and are very long, as our pipes are laid nine feet deep. Total hydrants in place 2,790. There were set the following gates:

67	6 inch gates at \$11.50	} Made by the Eddy Valve Co., Waterford, N. Y.
9	8 inch gates at 17.50	
2	16 inch gates at 63.00	
8	12 inch gates at 32.00	
2	24 inch gates at 193.00	

As all our gates, 1,865 in number, are of the same pattern, and as all patents have run out, I would respectfully recommend that standard plans be made for our gates and bids received on same, as the work can be done by local manufacturers as well as by the eastern firms.

PUMPING.

When bids for fuel for the various departments were received on January 7, C. A. Smith Lumber company made this proposition: That if the city would build certain extension furnaces to burn sawdust for the present boilers at the North Side station, said firm would, under bond, guarantee to furnish fuel to pump all water at said station for the price of \$3.00 per million gallons, or would, without any alterations in the boilers whatsoever, furnish the fuel per million gallons pumped for \$3.50. As Youghiogheny lump had been bought for \$3.44 per ton, the cost for fuel per million gallons pumped was \$3.80, or at the price bid January 7—\$3.69 for coal per ton—the cost would be \$4.06 per million. So the Smith bid, of course, showed a saving of from 50 cents to \$1.00 per million, which for 4,000,000,000 gallons pumped, would amount to from two to four thousand dollars.

As the boilers are of the regular marine type, with two 42 inch corrugated fire boxes, it was apparent that it would be difficult to build an extension furnace for burning sawdust, space also being limited in all directions. It was thought best to go slow on the matter of building such furnaces, and it was finally decided by the committee on water works to build an experimental furnace for one battery of boilers. The furnace was built as the accompanying plan shows, and experiments were made with sawdust, coal and wood, different grates being used for the sawdust and coal. The cost of the furnace, including a good many incidentals, in connection with the test, was \$1,415.00. It was found that the best results, using wood or coal as fuel, were obtained in the regular boiler without the extension furnace. Sawdust, of course, could only be used in the extension furnace.

Without going into the details of the tests, the best results on tests run without banking, were as follows: Sawdust was fired automatically, by a temporary arrangement—

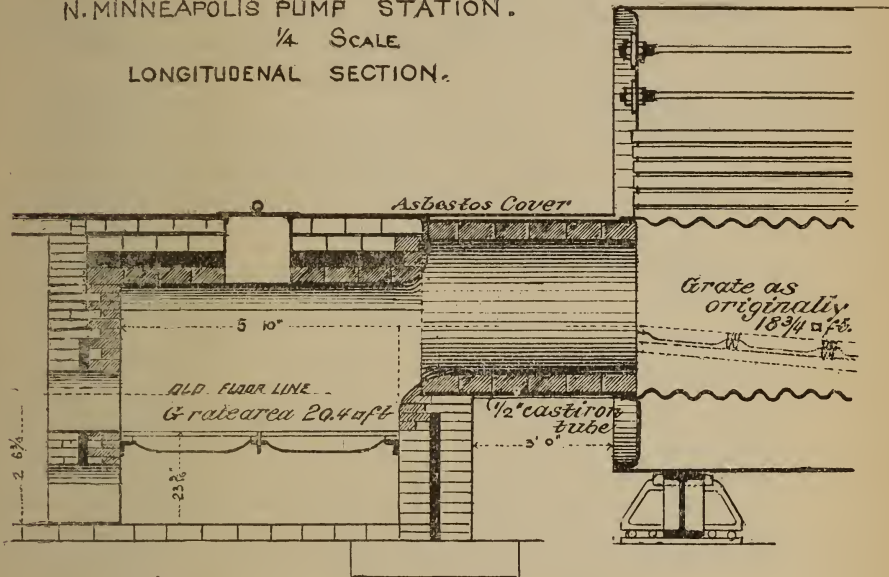
Kind of Fuel.	Cost of Fuel.	Amount of Fuel required for 1,000,000 gallons of water pumped.	Cost of Fuel to pump 1,000,000 gallons of water against 193 feet head.
Sawdust.....	\$0.75 per load, or 1.06 per cord.	3.98 cords.	\$4.22
Four foot mixed wood,	\$1.75 per cord.	1.88 cords.	\$3.29
Youghiogheny coal ...	\$3.39 per ton, (best market price.)	2,146 pounds.	\$4.17

Showing that according to the above prices, sawdust would cost 5 cents per million more than coal, and that wood was cheaper than coal by 88 cents per million. The price of \$1.06 for a cord of sawdust, I considered excessive, and a saving would of course be obtained above both wood and coal in case the price for sawdust could be cut in two, and which would be about the right price for sawdust.

As the sawdust fire in our case could not be forced, the test demonstrated that 25 per cent. more boiler capacity was required using sawdust for fuel, and as the plant is so arranged so as to always

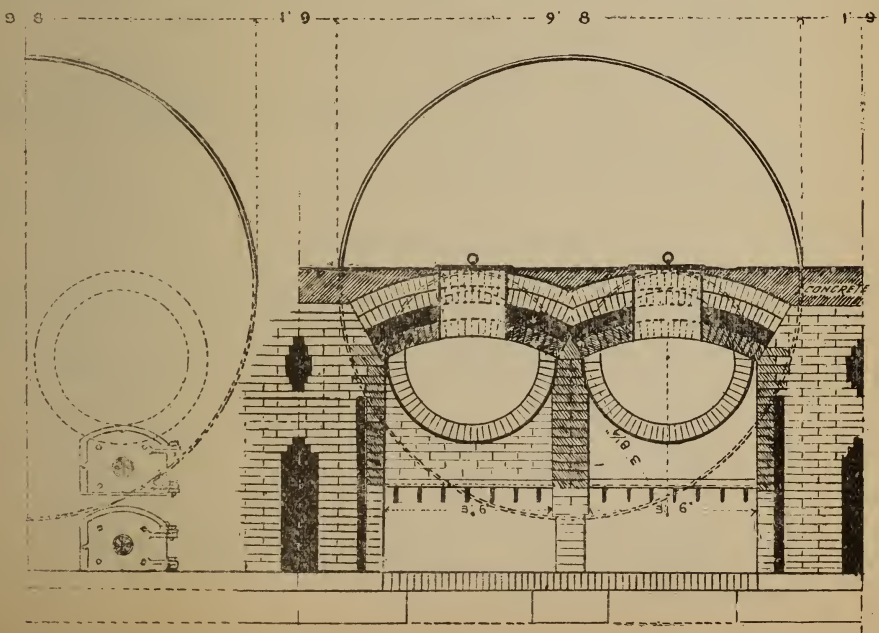
EXPERIMENTAL
EXTENSION FURNACE.

N. MINNEAPOLIS PUMP STATION.
1/4 SCALE
LONGITUDINAL SECTION.



HALF END ELEVATION

CROSS SECTION.



I hope that your honorable body will be able to restore the salaries to those of 1894, as my assistants, who have all worked faithfully and hard, are certainly now paid a minimum compensation for their service, and more work has been done by this department during 1895 than for some time past. I beg to call your attention to Table No. 18, which in a condensed form relates to all work done, divided on ward lines.

Respectfully submitted,

F. W. CAPPELEN.

City Engineer.

TABLE NO. 14.
STATEMENT OF WORK DONE BY THE CITY ENGINEER'S DEPARTMENT, MINNEAPOLIS, JANUARY 1, 1896.

	Total in City to Date.			Done in 1894.			Done in 1895.			Done in 1896.		
	Miles.	Sq. Yds.	Cost.	Miles.	Sq. Yds.	Cost.	Miles.	Sq. Yds.	Cost.	Miles.	Sq. Yds.	Estimated Cost.*
Sewers	129.41	.....	\$4,000,280	10.6	.....	\$203,513	6.47	.....	\$140,417	+	10.17	\$93,980
Water mains.....	233.91	.....	2,500,794	14.6	.....	114,776	11.88	.....	79,176	.....	.....	.....
				{ **1.6	24,560	11,039						
{ Cedar.....	79.45	1,258,527	1,251,900	{ 7.2	112,022	97,472	.62	9,762	8,309			
{ Granite.....	* 9.56	151,588	367,857	.2	2,553	3,718	.02	314	759			
{ Asphalt.....	* 4.61	73,028	210,473	.6	9,756	27,610	1.23	19,458	48,467	+		
{ Brick.....	* .06	871	1,244				.05	871	877			
{ Macadam.....	* 4.60	72,778	54,707									
{ Sandstone.....	52.99	.....	277,599									
{ Limestone.....	26.11	.....	176,971									
{ Granite.....	12.49	.....	58,167	6.3	.....	28,859	1.58	.....	8,453	+		
{ Combined (artificial)												
Curb {												
{ Curb and Gutter.....	30.71	.....	118,200	2.4	.....	6,068						
{ Granolithic (artificial).....	2.95	.....	11,041				1.41	.....	3,837			
{ Cement (artificial).....	.45	.....	2,309									
Sidewalks {												
{ Laid by city.....				23.7	.....	33,469	18.80	.....	37,941			Asmt \$151,986
{ Laid by owners.....				13.1	.....	15,249	20.70	.....	41,772	64.11		
Sprinkling.....												
Bridges.....				206.4	.....	79,735	226.	.....	93,211	240.00		99,338
						79,489			22,283			

*The length of paving is calculated on the basis of a roadway 27 feet wide.

+To be ordered after Jan. 1, 1896.

**Retaind.

TABLE NO. 15.

ACCOUNT AND COST OF LUMBER USED UNDER THE DIRECTION OF THE
CITY ENGINEER'S DEPARTMENT DURING THE SEASON OF 1895.

WARDS, ETC.	Culverts and Crossw'ks. feet.	Sidewalk repairs. feet.	Sidewalk. feet.	Total feet.	Total cost.
First.....	6,054	6,056	.....	12,110	\$158.23
Second.....	26,001	8,800	23,344	58,145	677.46
Third.....	22,408	3,600	151,087	177,095	2,061.72
Fourth.....	4,650	23,077	10,488	38,215	432.63
Fifth.....	39,533	3,400	15,316	58,249	666.30
Sixth.....	10,133	3,493	110,717	124,343	1,447.48
Seventh.....	16,165	22,934	144,187	183,286	2,132.95
Eighth.....	60,592	11,840	129,609	202,041	2,331.12
Ninth.....	11,158	7,400	2,176	20,734	240.68
Tenth.....	14,944	.....	208,093	223,037	2,612.46
Eleventh.....	22,516	17,560	4,480	44,556	504.01
Twelfth.....	2,352	17,200	61,740	81,292	927.35
Thirteenth.....	13,620	.....	139,151	152,771	1,778.68
Ward totals.....	250,126	125,360	1,000,388	1,375,874	\$15,971.07
Cedar block paving repairs.....	.....	.....	.....	8,644	\$101.00
Bridge repairs and bridges.....	.....	.....	.....	283,689	3,942.27
Sewers.....	.....	.....	.....	216,915	2,370.03
Oak lumber for bridge repairs..	.....	.....	.....	53,767	935.90
Reservoir.....	.....	.....	.....	145,704	1,707.38
Totals.....	250,126	125,360	1,000,388	2,084,593	\$25,027.57

TABLE NO. 16.

INVENTORY OF PERMANENT PUBLIC IMPROVEMENTS JANUARY 1, 1896.
CONSTRUCTED BY OR IN CHARGE OF THE CITY ENGINEER'S DEPARTMENT.

	Length miles.	Cost.	Total cost.
Pavement streets, alleys and bridges.....	*98.28	.....	\$1,866,180.00
Curb and gutter.....	124.17	.....	653,866.00
Sewers and sewer tunnels.....	129.41	\$4,000,240.00	.....
Sewer store house.....	.....	2,368.00	.....
Water mains.....	233.91	\$2,500,794.00	.....
Water works plant.....	.....	678,987.00	.....
Water works plant (reservoir).....	.....	184,474.00	.....
Watering fountains for people and horses.....	.....	5,841.00	.....
BRIDGES—			3,370,096.00
Over Mississippi river.....	.....	\$1,086,643.00	.....
Over Bassett's creek.....	.....	78,707.00	.....
Over Graham's creek.....	.....	652.00	.....
Over University creek.....	.....	13,085.00	.....
Over Mill Company's canal.....	.....	10,005.00	.....
Over Shingle creek.....	.....	3,347.00	.....
Over Minnehaha creek.....	.....	16,653.00	.....
Over Bridal Veil creek.....	.....	462.00	.....
Over or under railroads.....	.....	489,352.00	.....
Steamboat landing house and wharf.....	.....	.....	1,698,906.00
Municipal subway.....	.....	.....	1,056.00
Total.....	.....	.....	12,205.00
			\$11,604,958.00

*Calculated on a basis of a roadway 27 feet wide.

PLAN

OF

MINNEAPOLIS

HEMPHILL CO.

1898

BY

CITY ENGINEERS

STANDARD MAP CO.

STREET MAP OF MINNEAPOLIS



MAP OF MINNEAPOLIS,

HENNEPIN CO., MINN.

1896

BY
CITY ENGINEERS OFFICE.

F.W. CAPPELEN.
City Engineer

SCALE, 2000 FT. TO ONE INCH.

CITY DATUM 709.533 FT ABOVE SEA LEVEL

EXPLANATIONS.

- | | |
|--------------------|--|
| RAILROADS | |
| STREET CAR LINES | |
| CONTOUR LINES | |
| BRIDGES | |
| PARKS & BOULEVARDS | |
| PAVING | |
| | |
| | |
| | |
- Cedar Block.
Granite Block.
Sheet Asphalt.
Macadam.

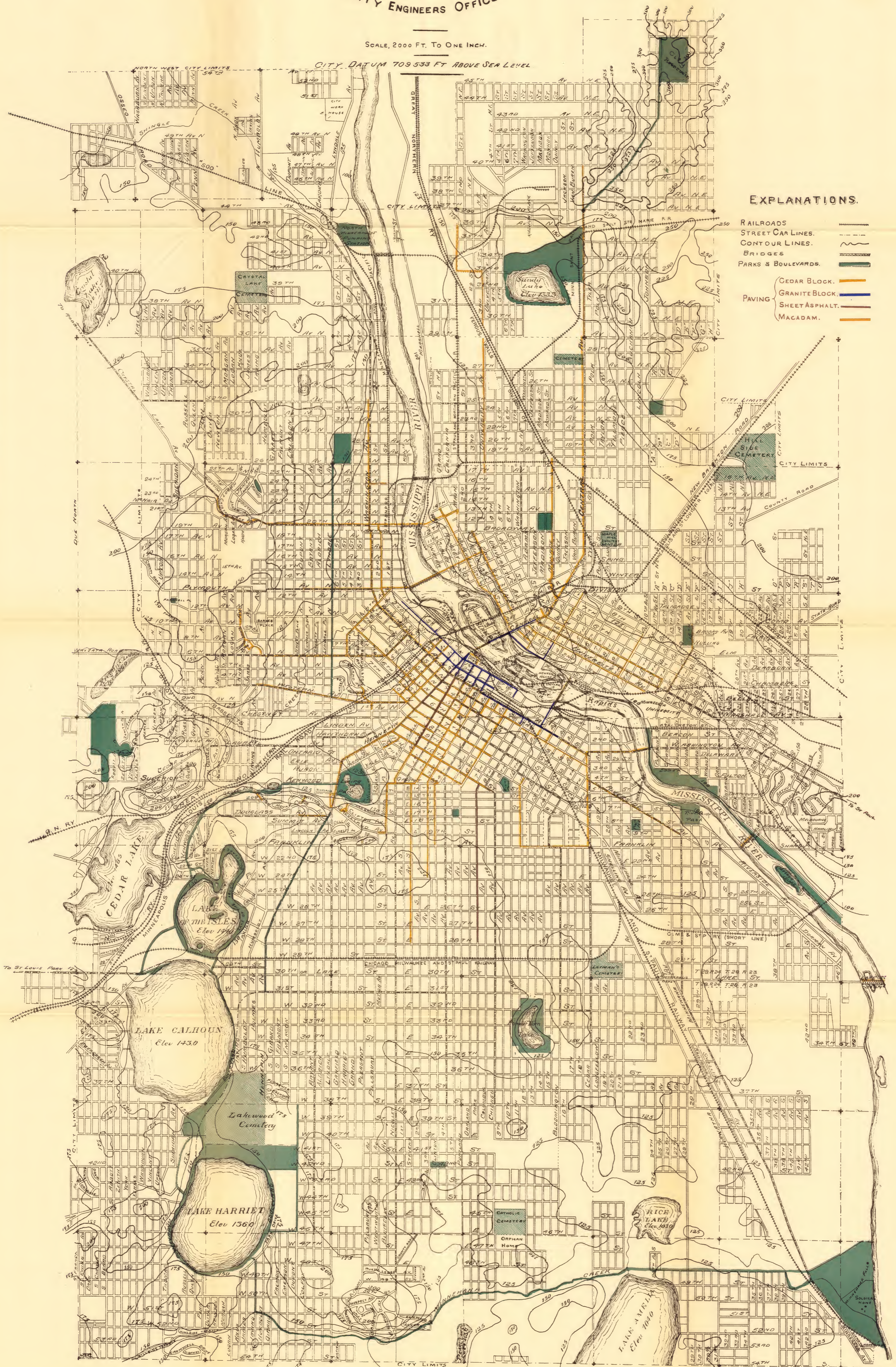


TABLE NO. 17.

EXPENDITURES FOR PUBLIC IMPROVEMENTS UNDER THE DIRECTION OF
THE CITY ENGINEER FROM JAN. 1, 1895, TO JAN. 1, 1896.

ENGINEER DEPARTMENT—		
Pay rolls.....	\$32,821.58	
Stationery and office supplies.....	402.07	
Blank books, blanks, maps, plats, plat books and printing...	452.69	
Draughtsman's supplies.....	139.68	
Instruments and tools (new).....	124.04	
Instrument repairs.....	56.45	
Postage.....	183.00	
Telephone.....	78.70	
Telegrams.....	21.13	
Typewriter supplies.....	122.25	
Livery.....	10.50	
	<hr/>	\$34,412.09
WARDS—		
Tools, supplies, repairs and St. Commissioners' pay rolls.....	97,540.47	
Culvert and cross walk material.....	120.57	
	<hr/>	97,661.04
SIDEWALKS—		
New.....	37,930.59	
Repairs.....	5,655.47	43,586.06
Sweeping and cleaning paved streets.....		28,531.54
Street sprinkling.....		93,210.45
PAVING—		
New.....	58,930.50	
Repairs.....	7,244.53	
	<hr/>	66,175.03
Curb and gutter.....		16,994.36
Street lighting, moving lamp post, etc.....		48.00
Bridges and bridge repairs.....		22,283.15
Municipal subways.....		1.75
North Side pumping station.....		314.88
Maple Hill cemetery.....		217.26
SEWERS—		
Construction.....	140,021.73	
Drain and two catch basins on University grounds.....	237.50	
Sewer for Engine House No. 12.....	120.58	
Sewers for 1894.....	37.46	
	<hr/>	140,417.27
Reservoir.....		184,474.15
Total.....		<hr/>
		\$728,357.03

TABLE NO. 18.
STATISTICS OF THE CITY BY WARDS, JANUARY 1, 1896.

Wards.	Area Sq. miles.	Popula- tion, 1895.	Popula- tion per Sq. mile.	Total miles of streets.	Miles of traveled Sts.			Miles of curb.	Miles of sidewalk.			Miles of sewer nec- tions.	Miles of water nec- tions.	Miles of sprin- kled streets.	Miles of St. car track. Single line.	Valuation real and personal, 1895.	Valuation per capita.	Rate of taxation for ward fund 1895. Mills.
					Miles of graded.		Paved St. 27 ft. Rd'w'y.		Stone	Plank	Total.							
1	2.49	13,915	5,669	38.3	4.03	21.20	8.04	9.87	12.93	16.44	29.37	7.61	11.00	526	11.88	\$4,396,456	\$316.00	2.0
2	4.31	11,324	2,627	61.5	11.85	19.59	10.37	13.84	23.38	13.84	37.22	12.73	18.40	856	10.12	8,333,368	736.00	1.0
3	3.41	26,758	7,847	66.5	7.45	32.45	16.97	16.99	19.20	59.55	78.75	17.82	32.18	1,691	26.61	13,529,460	596.00	1.5
4	4.00	24,043	6,011	67.5	7.15	27.79	23.08	27.28	37.05	25.57	62.62	23.06	28.93	1,750	25.93	28,455,326	1,599.00	0.7
5	1.38	23,256	16,852	30.5	.....	20.50	18.90	30.04	37.85	15.46	53.31	21.44	26.35	2,680	29.02	23,316,655	1,261.00	0.5
6	7.71	15,519	21,538	14.1	.....	11.83	5.08	4.09	4.29	16.71	21.09	6.32	7.94	730	11.77	4,532,687	292.00	1.5
7	3.72	11,404	3,066	53.2	21.32	19.46	.....	0.48	7.98	21.70	23.68	6.26	15.84	643	17.05	4,372,313	384.00	1.5
8	4.06	16,440	4,049	66.3	12.34	46.12	1.83	9.05	19.80	49.72	69.52	15.47	38.90	1,859	16.06	12,436,308	756.00	1.5
9	6.18	15,777	2,553	86.0	13.35	19.54	9.97	8.34	14.08	26.38	40.46	8.10	17.94	709	17.06	4,969,070	315.00	2.0
10	5.88	8,450	1,437	75.2	22.85	9.79	3.07	0.95	0.65	18.65	19.30	1.22	32	11	6.11	4,334,839	513.00	2.0
11	1.01	15,597	15,442	21.9	1.00	18.84	3.07	5.27	3.93	30.17	37.10	6.94	11.61	750	18.14	4,116,987	264.00	1.5
12	7.28	6,976	958	79.5	30.43	20.21	.....	.....	3.35	14.99	18.34	2.38	13	4	6.97	3,196,928	458.00	2.0
13	8.86	3,374	381	122.9	41.67	6.56	.....	.....	0.26	8.77	9.03	.06	02	8	9.14	3,893,889	1,154.00	2.0
T'1.	53.29	192,833	av 3,619	783.4	173.44	273.88	98.28	126.81	187.75	317.95	505.70	129.41	4,862	232.91	225.98	\$135,884,286	Av. 705.00	.....

Wards	Amount of tax levy 1895, for ward fund	Amount of sprink- ling, tax of 1895.	Miles of sidewalk ordered, tax 1895.	Amount of side- walk tax of 1895.
1	\$8,792.91	\$7,473.30	8.51	\$34,137.63
2	8,333.37	7,352.16	1.00	2,851.57
3	20,294.19	8,152.20	6.74	13,571.56
4	26,918.73	13,568.54	3.25	9,211.39
5	14,058.33	13,332.87	1.82	5,917.20
6	6,799.04	5,587.55	1.76	6,878.40
7	6,558.47	6,972.27	5.16	12,627.38
8	18,654.46	16,816.66	13.45	36,690.17
9	9,938.14	7,632.70	6.11	17,641.85
10	8,669.68	1,394.79	5.91	8,429.30
11	6,175.48	7,440.61	3.22	7,060.39
12	6,363.86	1,763.32	2.97	4,857.93
13	7,787.78	1,850.96	1.50	2,122.95
Total.	\$149,974.44	\$99,337.93	61.40	\$151,985.63

TABLE NO. 20.
SUMMARY BY WARDS OF ALL PAVING IN THE CITY JANUARY 1, 1896.

KIND.	WHERE LAID.	WARDS.										Total Square yards.	Cost.	Miles of aver- age 27 feet roadway.
		Square yards.												
		1st.	2d	3d.	4th.	5th	6th.	8th.	9th.	10th.	11th.			
CEDAR BLOCK ...	Streets.....	70,192	120,573	203,023	229,233	199,484	57,016	10,720	84,671	10,491	42,279	1,027,682	\$1,107,897.41	64.88
	Alleys.....	.....	.....	.....	13,390	8,294	.....	.....	.....	.....	.....	21,684	25,039.01	1.36
	Bridges.....	8,779	5,022	10,671	8,393	.....	1,084	.....	5,701	94	1,045	40,789	30,591.75	2.58
	Street R'y and gutter...	8,067	17,170	37,943	38,391	12,169	14,300	458	29,317	4,702	5,255	168,372	168,372.00	10.63
	Total.....	87,038	142,765	251,637	289,407	219,947	72,400	11,178	119,689	15,287	48,579	1,258,527	\$1,231,900.17	79.45
GRANITE BLOCK..	Streets.....	5,152	19,996	15,361	38,242	49,376	7,456	.....	.....	.....	.....	135,583	\$327,829.09	8.56
	Alleys.....	.....	.....	.....	1,506	.....	.....	.....	.....	.....	.....	1,506	3,514.86	.09
	Bridges.....	747	748	218	.....	.....	.....	.....	.....	.....	.....	1,713	4,517.40	.10
	Street R'y and gutter...	786	785	.....	5,712	4,788	719	.....	.....	.....	.....	12,786	31,965.00	.81
	Total.....	6,685	21,530	15,579	45,460	54,159	8,175	.....	.....	.....	.....	151,588	\$367,856.35	9.56
SHEET ASPHALT..	Streets.....	.....	.....	.....	29,214	25,305	.....	17,386	.....	.....	.....	71,905	\$207,569.71	4.54
	Alleys.....	.....	.....	.....	670	.....	.....	.....	.....	.....	.....	670	1,657.48	.04
	Bridges.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Street R'y and gutter...	.....	.....	.....	.....	.....	.....	453	.....	.....	.....	453	1,245.75	.03
	Total.....	.....	.....	.....	29,884	25,305	.....	17,839	.....	.....	.....	73,028	\$210,472.94	4.61
BRICK	Streets.....	.....	.....	.....	678	.....	.....	.....	.....	.....	.....	678	\$876.45	.05
	Alleys.....	.....	.....	.....	193	.....	.....	.....	.....	.....	.....	193	306.89	.01
	Bridges.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Street R'y and gutter...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	.....	.....	.....	871	.....	.....	.....	.....	.....	.....	871	\$1,213.34	.06
MACADAM.....	Streets.....	33,000	.....	1,645	.....	.....	.....	.....	29,333	.....	.....	63,978	\$18,107.12	4.01
	Street R'y and gutter...	.....	.....	.....	.....	.....	.....	.....	8,800	.....	.....	8,800	6,600.00	.56
	Bridges.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Street R'y and gutter...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	33,000	.....	1,645	.....	.....	.....	.....	38,133	.....	.....	72,778	\$54,707.12	4.60
	GRAND TOTAL..	127,323	164,205	268,861	365,622	299,411	80,575	29,017	157,822	15,287	48,579	1,556,792	\$1,866,179.92	98.28

TABLE NO. 21.
PAVING DONE DURING THE SEASON OF 1895.

STREET.	FROM	TO	KIND.	Width paved by Feet.	Width paved by St. Ry. Feet.	Width paved by City Feet.	Width of Road- way Feet.	Rate of Assess't per sq. yd. \$	Contract price per sq. yd.	Length paved. Feet.	Square Yards by City.	COST.	CONTRACTORS.	REMARKS.
11th av. S.	Wash. av. ...	3rd st.	Cedar block	...	...	50	50	\$.79	\$.78	323	1,819	\$1,418.74	Canney Bros.	
Holden st.	Royalston av.	Alley. ....	"	...	...	Irreg	...	.79	.78	155	389	312.43	Canney Bros.	
Marshall st.	13th av. N. E.	14th av. N. E.	"	...	...	50	50	.79	.78	490	2,680	2,090.32	Canney Bros.	
Nicollet av.	Wash. av.	10th st.	Utah asphalt	...	...	50	50	2.50	2.49	3,520	19,458	48,466.84	The Amer. Asphalt Co.	Tax 1895.
2nd st. N.	3rd av. N.	Bdg. over RR	"	...	...	Irreg	...	.79	.78	205	1,005	784.37	Canney Bros.	
13th av. N. E.	Marshall st. ...	Main st. ....	"	...	...	36	36	.79	.78	720	3,045	2,374.94	Canney Bros.	
Alley, Block 53, Minneapolis.	Hennepin av.	Alley.	Granite	...	...	15	15	2.49	2.48	126	179	444.24	Canney Bros.	Tax 1895.
Alley, Block 63, Minneapolis.	3rd st.	Main alley. ...	Brick	...	...	10	10	1.91	1.90	160	193	388.14	Canney Bros.	Tax 1896.
Alley, Block 56, Minneapolis.	2nd av. N.	3rd av. N.	Cedar block	...	...	16	16	.89	.88	336	624	549.12	Canney Bros.	Tax 1895.
Alley, Block 80, Minneapolis.	Over M&StLR	...	Granite	...	...	10	10	2.32	2.32	135	135	314.59	Done by City.	Tax 1895.
Griswold's sub. Hennepin av.	Over M&StLR	...	Brick	...	...	100	100	...	...	60	678	876.45	Done by City.	No tax.
Incidentals ....	...	...	...	...	...	...	...	...	...	...	...	391.75		
Totals .....	...	...	...	...	...	...	...	...	...	6,230	30,405	\$53,411.93		
													Equals 1.919 miles of average 27 ft. cedar block.	
													" 0.62 " asphalt.	
													" 1.23 " granite.	
													" 0.02 " brick.	
													" 0.05 " "	

TABLE NO. 22.
PAVING REPAIRS DONE DURING THE SEASON OF 1895.
The work done under the direction of the City Engineer.

	No. of orders.	Total number of yards laid.	Total yards of old blocks laid.	Total yards of new blocks laid.	Amount paid for new blocks.	Amount paid for gravel.	Amount paid for sand.	Miscellaneous cross-walks, etc.	Amount paid for labor.	Amount paid for tools.	Total cost.
Cedar paving repairs.....	586	32,015	28,935	3,080	\$971.37	\$1,027.61	.....	\$102.80	\$3,386.02	\$42.93	\$5,512.73
Granite paving repairs.....	182	6,563	6,573	8	7.20	.....	\$66.80	1.06	1,530.92	12.42	1,618.40
Totals.....	768	38,598	35,510	3,088	\$978.57	\$1,027.61	\$66.80	\$103.86	\$4,898.94	\$55.35	\$7,131.13
Cost per sq. yd. for laying old blocks on old plank.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.1386+
Cost per sq. yd. for laying new blocks on old plank.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.454—

TABLE NO. 23.
PAVING ORDERED TO BE ASSESSED IN THE TAXES FOR THE YEAR 1895.

All paving is done by contract, and all assessable property is assessed for the cost of paving that part of the street on which said property abuts. The cost of paving all street intersections and all parts of the streets along property exempt from special assessments is paid out of the permanent improvement fund, which is raised by general taxation. The paving is paid for in five (5) equal annual installments, with interest at five (5) per cent, per annum on all deferred payments. According to a report of a special committee no sewer, paving or curb and gutter to be constructed during the year 1895, shall be ordered before January 1, 1896, so that the work will be completed and the assessment levied to cover the actual cost of the work.

STREET.	FROM—	TO—	Roll No.	KIND.	Width of gutter, feet.	Width paved by street r.y., feet.	Width paved by city, feet.	Width of roadway, feet.	Rate of assessment per square yard.	Rate of assessment per front foot.	Length in feet.	Estimated square yds. for city.	Estimated cost for city.	Amount of assess- ment.	REMARKS.
Alley blk 53, Minneapolis.	Hennepin av.	Alley.	1	Granite.	15	15	15	15	\$2.49	\$2.03	136	179	\$40.94	\$417.12	Paved in 1895.
Alley blk. 56, Minneapolis.	Second av. N.	Third av. N.	2	Cedar blocks.	16	16	16	16	.89	1.56	330	624	27.22	521.40	Paved in 1895.
Alley blk. 80 Griswold's sub.	Fifth st. S.	Main alley.	3	Granite.	10	10	10	10	2.32	.89	172	135	34.77	279.82	Paved 1895. done by city
Nicollet av.	Washington av.	Tenth st.	4	Utah asphalt	50	50	50	50	2.50	6.94	3,520	19,458	12,417.70	36,049.14	Paved in 1895.
Totals											4,148	20,386	\$12,520.63	\$37,267.48	0.787 miles.

TABLE NO. 24.
SUMMARY OF ALL CURB AND GUTTER SET AND IN PLACE JANUARY 1, 1896.

KIND.	NUMBER.	LENGTH.		COST.
		Miles, 1,000ths	Feet, 100ths.	
Kettle River sandstone .....	.....	52.993	279,801.65	\$277,598.58
Limestone .....	.....	26.103	137,825.07	176,971.16
Combined curb and gutter (artificial) .....	.....	30.712	162,160.40	118,200.05
Granolithic (artificial) .....	.....	2.947	15,454.50	11,041.07
Cement (artificial) .....	.....	0.446	2,356.30	2,308.98
Granite .....	.....	12.491	65,955.95	58,167.61
Curb corners	688	.....	.....	5,663.00
Catch basin covers	1,007	.....	.....	12,680.00
Total curb set in city	1,695	125.692	663,653.87	\$662,630.45
Granite curb to replace limestone curb .....	.....	1.527	8,061.70	8,764.77
Total curb in place in city .....	.....	124.165	655,592.17	\$653,865.08

OF

MINNEAPOLIS

HENNEPIN CO.

1896

BY

CITY ENGINEERS

Scale 5000 ft. to 1 in.



MAP OF MINNEAPOLIS,

HENNEPIN CO., MINN.

1896

BY
CITY ENGINEERS OFFICE.

F.W.CAPPELEN.
City Engineer

SCALE, 2000 FT. TO ONE INCH.

CITY DATUM 709.533 FT. ABOVE SEA LEVEL

EXPLANATIONS.

- RAILROADS
- STREET CAR LINES.
- CONTOUR LINES.
- BRIDGES
- PARKS & BOULEVARDS.
- SEWERS
- SEWER TUNNELS

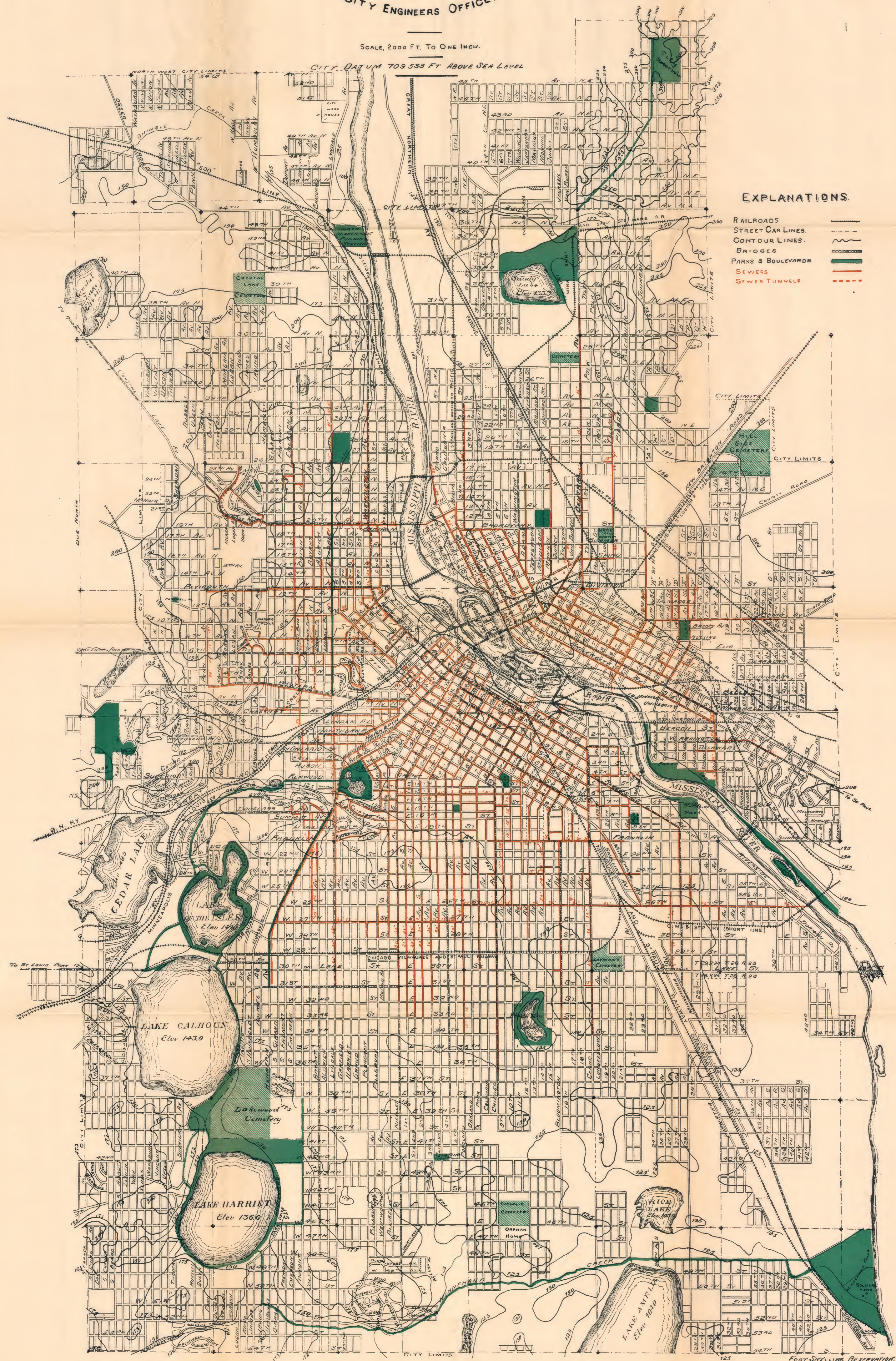


TABLE NO. 27.

SUMMARY OF SEWERS AND SEWER TUNNELS CONSTRUCTED PRIOR TO
JANUARY 1st, 1896.

KIND.	Size in Inches.	Total Length.	
		Feet.	Feet.
Vitrified clay pipe.....	9	82.4	
Vitrified clay pipe.....	10	578.1	
Vitrified clay pipe.....	12	18,602.7	
Vitrified clay pipe.....	15	21,444.6	
Vitrified clay pipe.....	18	431.9	
Cement pipe.....	12	97,044.1	
Cement pipe.....	15	52,751.8	
Cement pipe.....	18	19,934.1	
Cement pipe.....	24	1,183.9	
			212,053.6
Brick.....	18	46.7	
Brick.....	20	20.4	
Brick.....	24	232,912.1	
Brick.....	27	2,511.3	
Brick.....	30	57,163.7	
Brick.....	33	11,102.4	
Brick.....	36	35,114.3	
Brick.....	39	2,871.5	
Brick.....	40	3,872.2	
Brick.....	42	11,805.3	
Brick.....	44	2,852.4	
Brick.....	45	2,171.6	
Brick.....	48	6,063.3	
Brick.....	51	7,285.5	
Brick.....	54	9,909.4	
Brick.....	60	14,409.2	
Brick.....	63	329.7	
Brick.....	65	1,732.3	
Brick.....	66	1,648.9	
Brick.....	72	10,463.1	
Brick.....	75	664.4	
Brick.....	78	655.8	
Brick.....	80	466	
Brick.....	84	1,296.6	
Brick.....	86	1,604	
Brick.....	87	590.3	
Brick.....	90	7,781.9	
Brick.....	93	978.9	
Brick.....	96	14,555.5	
			442,888.7
	124.012 miles.		654,942.3

TUNNELS.

STREET.	FROM	TO.	Length, Feet.
Eighth avenue south.....	River.....	Washington avenue.	860
Eleventh avenue south....	River.....	218.4 feet N. of Second st	645
Fourth street south.....	River.....	Twenty-first avenue.	940
Tenth avenue southeast....	River.....	Second street.	473
Northeast Minneapolis....			7,235.3
Oak street.....			186
Second street northeast	Central avenue.....	Broadway street.	4,550
East Twenty-sixth street	River.....	Riverside avenue.	452.5
North Minneapolis.....			7,256.5
Third avenue northeast..	River.....	Fifth street.	1,733.6
Third avenue northeast..	Fifth street.....	Madison street.	678.2
University avenue N. E..	First avenue.....	Third avenue.	787
Fourth street northeast	First avenue.....	Third avenue.	710.4
First avenue north.....	River.....	First street.	690.2
Third avenue northeast..	Madison street.....	87.5 ft. east of Jackson st	1,174.9
Total feet.....			28,372.6
Total miles.....			5.364
Total sewers and tunnels, feet.....			693,314.9
Total sewers and tunnels, miles.....			129.406

TABLE NO. 28.
SEWER CONNECTIONS AND MILEAGE BY WARDS.

Wards.	Sewer connections.				Miles of Sewers.			Miles of tunnels.
	Made prior to 1895.	Made in 1895.	Made per mile of sewers	Total.	Prior to 1895.	Built in 1895.	Total.	Total.
1	194	16	41.58	210	4.467	0.583	5.05	2.556
2	424	22	36.18	446	11.558	0.768	12.326	0.402
3	502	49	31.16	551	17.2	0.479	17.679	0.142
4	1,070	53	49.86	1,123	21.9	0.625	22.525	0.539
5	1,134	44	57.6	1,178	19.983	0.469	20.452	0.988
6	188	16	33.9	204	5.984	0.033	6.017	0.3
7	79	27	16.93	106	6.091	0.168	6.259	
8	497	108	39.1	605	14.612	0.86	15.472	
9	115	15	16.79	130	6.362	1.381	7.743	0.352
10	28	4	26.16	32	0.975	0.248	1.223	
11	229	33	37.73	262	6.597	0.347	6.944	
12	9	4	5.68	13	1.789	0.501	2.29	0.086
13	1	1	33.33	2	0.06	.....	0.06	
Tot'l	4,470	392	Av. 39.2	4,862	117.578	6.462	124.04	5.365

TABLE NO. 29.

SEWERS ORDERED TO BE ASSESSED IN THE TAXES FOR THE YEAR 1895.

For several years all work of sewer construction has been done by the city by day labor. All assessable property abutting on the street in which a sewer is constructed is assessed at the uniform rate of \$1.50 per front foot, regardless of the size of the sewer, and any excess in the cost of a sewer above the assessment is paid from the permanent improvement fund. The tax for sewers is paid in five equal annual installments, with interest at 5 per cent per annum on all deferred payments. According to the report of a special committee no sewer, paving or curb and gutter to be constructed during the year 1896, shall be ordered until after January 1, 1896.

STREET.	FROM—	TO—	Size in ins.	Kind.	Shape.	Len'th in feet.	Amount of ass'm't	Estimated cost.
*Bryant av..	4th av. N. .	5th av. N.....	12	Pipe...	Circle.	355.7	\$1,019.70	\$716.00
*Douglas av.	Dupont av..	Emerson av..	24	Brick .	Egg ...	330.6	660.00	1,000.00
*Emerson av	Douglas av.	Mt. Curve av.	15	Pipe...	Circle.	337.1	781.50	960.00
*8th av. N. .	Wash. av. .	3d st.	12	Pipe...	Circle.	380.7	874.80	700.00
*14th st.	1st av. S.	Stevens av. .	12	Pipe...	Circle.	293.0	540.60	493.00
*17th av. S..	26th st.	N. line lot 9, blk. 2, Gilpatrick's 2d.	12	Pipe...	Circle.	277.4	495.00	445.50
Totals. ....	.....	.....	.....	.....	.....	1,974.5	\$4,371.60	\$4,314.50

*Money advanced and built in 1895.

†Built in 1895.

TABLE NO. 31.
ESTIMATE OF SEWERS PETITIONED FOR 1896.

STREET.	FROM—	To—	Size in Inches	Kind.	L'ngth	Estimated cost.
Aldrich av.....	27th st.....	32nd st.....	60	Brick..	5,208	\$24,217.00
*Bryant av.....	4th av. N.....	5th av. N.....	12	Pipe...	358	716.00
Buchanan st.....	22nd av. N. E.....	23d av. N. E.....	15	Pipe...	650	1,870.00
*Douglas av.....	Dupont av.....	Emerson av.....	24	Brick..	330	1,000.00
*Dell place.....	Sewer on Foresta	100 ft. north.....				
*Emerson av.....	Douglas av.....	Lincoln av.....				
*Emerson av.....	Douglas av.....	Mt. Curve av.....	15	Pipe..	331	960.00
Emerson av.....	27th st.....	Hennepin av.....	33	Brick..	1,748	7,166.00
*8th av. N.....	Washington av.....	3rd st.....	12	Pipe..	372	700.00
8th st. S.....	6th av.....	1st ave.....	39	Brick..	1,230	5,597.00
			33		820	4,400.00
4th st. N. E.....	7th av.....	Broadway st.....	15	Pipe...	613	4,000.00
			12		351	1,700.00
5th st. N.....	11th av.....	Plymouth av.....	30	Brick..	908	3,450.00
14th av. S.....	26th st.....	Lake st.....	60	Brick..	2,613	25,155.00
*E 14th st.....	1st av. S.....	Stevens av.....	12	Pipe...	290	493.00
15th av. N.....	5th st.....	6th st.....	24	Brick..	322	1,000.00
Girard av.....	5th st.....	Franklin av.....	24	Brick..	1,942	4,686.00
Harriet av.....	22nd st.....	25th st.....	15	Pipe...	645	1,382.00
			12		608	1,141.00
Hennepin av.....	32nd st.....	31st st.....	24	Brick..	670	1,773.00
Lake st.....	14th av. S.....	10th av. S.....	54	Brick..	1,310	9,170.00
Marshall st.....	18th av. N. E.....	22nd av. N. E.....	65	Brick & concrete..	1,475	20,650.00
+Monroe st.....	18th av. N. E.....	25th av. N. E.....				
+9th st. S.....	19th av.....	20th av.....	12	Pipe...	350	759.00
+Park av.....	Lake st.....	31st st.....				
			24	Brick..	388	1,200.00
6th st. N.....	Plymouth av.....	20th av.....	15	Pipe...	793	2,200.00
			12	Pipe...	927	3,000.00
			24	Brick..	400	1,200.00
6th st. S. E.....	10th av.....	13th av.....	15	Pipe...	410	1,025.00
			12	Pipe...	358	823.00
			24	Brick..	200	722.00
7th av. N.....	5th st.....	Oak Lake av.....	15	Pipe...	351	733.00
			12	Pipe...	641	1,684.00
16th av. S. E.....	Como av.....	Division st.....	24	Brick..	1,312	4,500.00
*17th av. S.....	26th st.....	N. line of lt 9, blk 2				
		Gilpatrick's ad.	12	Pipe...	277	446.00
2½ st.....	Cedar av.....	21st av. S.....	18	Pipe...	811	2,114.00
			15		422	884.00
3rd av. S.....	8th st.....	9th st.....	30	Brick..	410	1,412.00
3rd av. S.....	25th st.....	26th st.....	15	Pipe...	653	2,102.00
10th av. S.....	Lake st.....	34th st.....	24	Brick..	1,884	5,312.00
			15	Pip-...	658	1,492.00
			15	Pipe...	647	1,423.00
10th av. S.....	24th st.....	Franklin av.....	12		603	1,206.00
22nd st.....	Lyndale av.....	Harriet av.....	24	Brick..	650	1,824.00
22nd av. N. E.....	Fillmore st.....	Buchanan st.....	36	Brick..	648	4,679.00
25th st.....	Hennepin av.....	Girard av.....	24	Brick..	372	1,058.00
E. 25th st.....	Chicago av.....	Columbus av.....	12		276	524.00
			54	Brick..	321	
			51	Brick..	328	
32nd st.....	Aldrich av.....	Hennepin av.....	48	Brick..	656	
			45	Brick..	328	
			42	Brick..	328	
			39	Brick..	328	12,495.00
Total.....					37,524	\$176,043.00

*Built in 1895.

+Cannot be built at present.

TABLE NO. 32.
SUMMARY OF CEMENT INSPECTION FROM 1885 TO 1895 INCLUSIVE.

YEAR.	LOUISVILLE.				MILWAUKEE.				MANKATO.				AKRON.		BUFFALO.				PORTLAND.	
	Accepted.	Rejected.	Per cent. rejected.	A v. t'n'stle strength per sq. inch of accepted cement.	Accepted.	Rejected.	Per cent. rejected.	A v. t'n'stle strength per sq. inch of accepted cement.	Accepted.	Rejected.	Per cent. rejected.	A v. t'n'stle strength per sq. inch of accepted cement.	Accepted.	A v. t'n'stle strength per sq. inch.	Accepted.	Rejected.	Per cent. rejected.	A v. t'n'stle strength per sq. inch.	Accepted.	A v. t'n'stle strength per sq. inch.
1885.....	7,145	50	0.7	108	5,011	637	12.7	95.5	689	77	11.5	97	.....	.....	.....	.....	.....	.....	.....	.....
1886.....	9,409	84	0.89	93	4,310	150	3.4	75.5	105	.....	.....	85	.....	.....	.....	.....	.....	.....	.....	.....
1887.....	12,344	16	0.13	106.5	12,211	492	4.03	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888.....	11,853	323	2.7	120	9,773	206	2.1	82.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889.....	18,858	328	1.74	124%	16,499	498	3.02	104%	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890.....	11,828	3	0.025	136%	18,126	875	4.8	103%	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1891.....	5,931	200	3.37	118	11,641	714	0.1	101	.....	.....	.....	.....	1,000	118½	.....	139	21.38	82.5	.....	.....
1892.....	7,020	1,250	17.8	112.5	1,500	900	60	91	5,020	308	6.3	89	.....	.....	.....	.....	.....	.....	.....	.....
1893.....	3,150	.....	.....	121.5	450	.....	.....	96	5,000	700	14.0	114.5	.....	.....	.....	.....	.....	.....	.....	.....
1894.....	5,000	.....	.....	125%	12,180	450	3.6	92%	100	.....	.....	82.5	.....	.....	.....	.....	.....	.....	.....	.....
1895.....	2,700	300	11.11	113	4,900	350	7.14	92	7,540	1,050	13.92	108.5	.....	.....	.....	.....	.....	.....	*1,200	435
Total.....	95,238	2,551	2.67	115.4	96,610	5,272	5.45	92.2	18,434	2,135	11.58	96	1,000	118½	650	139	21.38	82.5	.....	.....

NOTE.—Natural cement results are obtained after cement is exposed one hour in air and twenty-three hours in water.

*None rejected.

TABLE NO. 33.

TABLE SHOWING AVERAGE RESULTS OF CEMENT TESTS FOR A SERIES OF YEARS FROM 1888 TO 1895.

BRAND.	TENSILE STRAIN PER SQUARE INCH.											
	Neat.											
	24 Hrs.	7 Days.	1 Mo.	2 Mos.	3 Mos.	4 Mos.	6 Mos.	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs.	5 Yrs.
NATURALS—												
Louisville.....	131	142	202	271	327	353	368	416	443	460	384	493
Milwaukee.....	106	120	156	232	302	309	327	372	434	411	....	434
Mankato.....	109	119	218	238	259	273	280	319	336	317	335	392
Utica.....	53	153	245	236	257	268	242	259	282	320	281	322
Buffalo.....	119	172	260	294	305	336	290	346	....	....	....	....
Akron.....	91	151	216	308	317	373	364	369	410	....	....	....
	1 Cement 1 Sand.											
Louisville.....	70	85	118	150	178	213	257	271	311	329	285	294
Milwaukee.....	59	84	120	158	186	208	214	235	257	286	....	342
Mankato.....	49	67	140	163	179	171	182	195	186	183	....	....
Utica.....	21	100	160	164	182	192	156	196	212	292	240	315
Buffalo.....	60	73	128	191	209	222	212	167	....	....	....	....
Akron.....	65	78	145	203	219	220	213	202	160	...	....	....
	1 Cement 2 Sand.											
Louisville.....	37	50	71	95	110	129	144	161	173	172	165	155
Milwaukee.....	32	53	94	118	135	148	152	156	191	202	....	279
Mankato.....	31	43	98	116	120	125	126	153	128	179	....	201
Utica.....	19	96	117	111	122	128	121	134	172	213	179	228
Buffalo.....	29	39	73	92	115	110	103	97	....	....	....	....
Akron.....	38	47	96	155	152	173	149	115	110	....	....	....

TABLE NO. 33.—*Continued.*

BRANDS.	TENSILE STRAIN PER SQUARE INCH.											
	Neat.											
	24 Hrs.	7 Days	1 Mo.	2 Mos.	3 Mos.	4 Mos.	6 Mos.	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs.	5 Yrs.
PORTLANDS.												
Dyckerhoff.....	240	442	563	585	602	636	621	673	834	782	....	....
Stettin.....	...	403	527	548	578	592	578	655	....	....	....	....
Alsens	482	538	595	607	630	598	673	680	683	....	....
Hilton	453	515	602	583	605	620	688	850	796	....	....
Schiferdecker.....	...	367	384	436	435	465	448	509	....	....	....	....
Henry	405	563	652	666	695	685	646	655	677	...	....
Leavitt.....	...	444	505	549	595	627	591	674	750	693	....	....
Bremer Porta	303	391	464	510	532	534	667	....	....	....	....
Empire.....	...	297	443	545	571	634	761	....	....	....	....	....
Yankton.....	...	365	421	481	612	635	558	708	605	....	....	....
	1 Cement 2 Sand.											
Dyckerhoff.....	183	203	242	271	278	306	311	351	398	418	528	....
Stettin	129	270	271	310	313	313	370	....	....	....	....
Alsens.	203	246	271	287	312	314	341	359	362	...	....
Hilton	158	190	211	235	229	252	283	347	350	....	....
Schiferdecker.....	...	164	222	240	240	285	284	277	...	....	....	....
Henry.....	...	167	233	252	261	260	294	335	433	419	....	....
Leavitt.....	...	153	167	180	180	222	267	306	338	369	....	....
Bremer Porta.....	...	208	205	241	263	266	364	312	....	....	....	....
Empire..	160	211	....	....	....	....	....	....	....	....	....
Yankton	108	185	207	252	250	280	323	411	....	....	....
	1 Cement 3 Sand.											
Dyckerhoff	118	152	158	168	178	193	224	297	317	349	....
Stettin	132	168	201	203	199	229	267	....	...	....	....
Alsens.....	...	132	155	170	180	192	198	206	287	307	....	....
Hilton	109	140	154	161	164	170	196	184	261	....	....
Schiferdecker.....	..	87	122	128	145	138	156	183	....	...	....	....
Henry.....	...	122	161	171	182	190	211	230	265	281	....	....
Leavitt.....	...	81	119	120	119	140	168	200	280	226	....	....
Bremer Porta.....	...	117	141	145	165	181	152	222
Empire.	119	169
Yankton.....	...	97	148	180	208	209	250	288	290

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TABLE

1870-1871

1872-1873

1874-1875

1876-1877

1878-1879

1880-1881

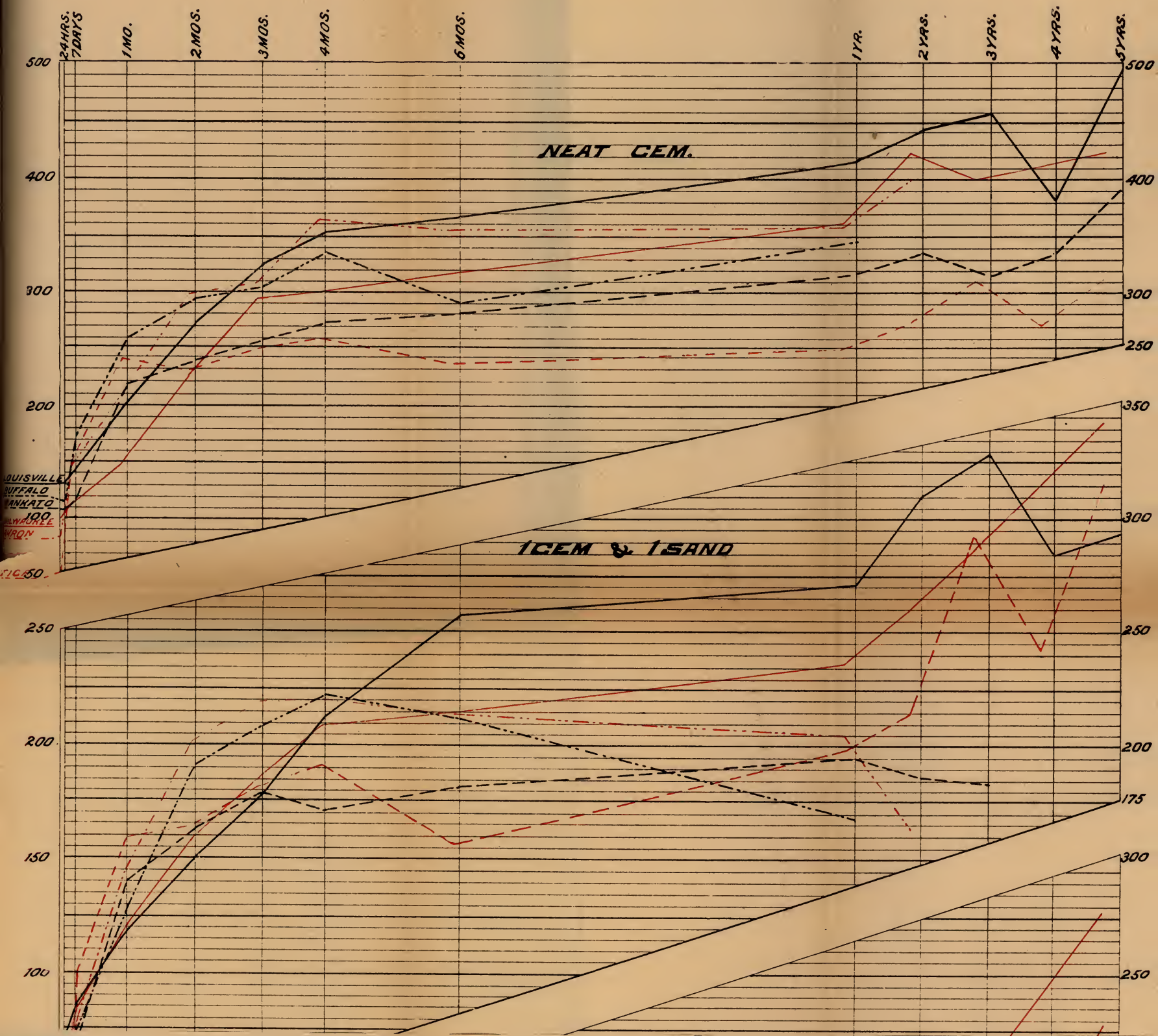
1882-1883

1884-1885

1886-1887

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TABLE
SHOWING
TENSILE STRENGTH OF NATIVE CEM. (PR. SQ. IN.) TESTS FROM 88 TO 94.



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SHOWING
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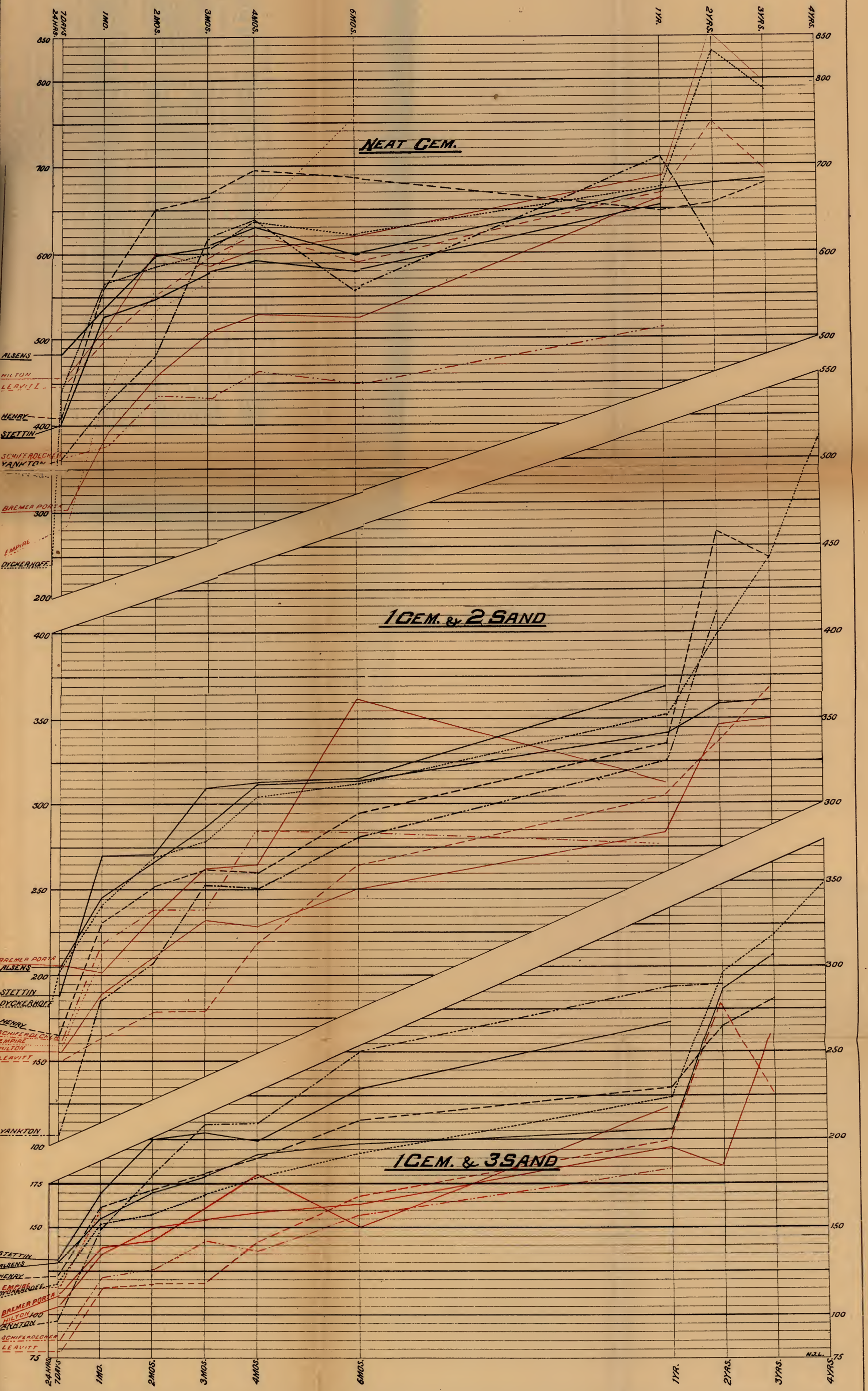


TABLE NO. 34.

CRUSHING TESTS OF CEMENT.

BRAND.	CRUSHING STRAIN PER SQUARE INCH.																				REMARKS.
	PORTLAND CEMENTS.										NATURAL CEMENTS.										
	NEAT.										1 CEMENT, 2 SAND.										
1 CEMENT, 3 SAND.										1 CEMENT, 2 SAND.											
1 M	2 M	3 M	4 M	6 M	1 Y	2 Y	1 M	2 M	3 M	4 M	6 M	1 Y	2 Y	1 M	2 M	3 M	4 M	6 M	1 Y	2 Y	
Dyckerhoff	2625	2000	3500	4250	4082	4800	5000	1125	1500	2600	3012	3125	4000	4725	1000	1550	1000	1000	1350	2225	3000
Stettin	2250	2500	2775	3500	4250	5000	5000	2000	3375	1700	3025	3240	3225	4500	1000	525	1100	1500	1900	1000	1500
Alsens	3025	4500	5000	5000	5000	5000	5000	1000	1750	1750	2250	.....	1125	3275	775	875	1050	1200	1000	1500	1525
Hilton	2500	4000	3375	4530	4500	5000	5000	1250	1625	1750	2250	2375	1800	3750	750	850	1000	1350	1350	1700	2000
Schiferdecker	n. g.	2500	2863	3250	3300	n. g.	.....	400	900	1725	1900	.....	2600	.....	175	700	1150	n. g.	2175	1225	.....
Bremer Porta	2900	2875	3100	4250	4750	3625	5000	1600	1750	2200	2200	2875	2200	3800	750	1075	1050	1000	1750	1125	2570
Yankton	2750	4750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dyckerhoff	3500	5000	5000	5000	5000	5000	5000	1125	1575	200	2700	2000	4875	.....	916	925	950	1300	1440	1750	.....
Crescent Stettin	2925	2750	2875	4000	5000	5000	5000	1900	1250	2300	3000	3300	2900	.....	750	1200	925	1250	1250	1825	.....
Hilton	2160	3500	3125	4675	5000	5000	5000	1675	1750	1400	1950	1590	2875	.....	612	900	925	875	1060	1000	.....
White	3500	3250	5000	5000	5000	5000	5000	1975	2475	2000	2000	2640	2700	.....	1050	900	750	1750	950	1550	.....
Oland	4000	3700	3125	5000	5000	5000	5000	1700	2000	2540	2825	4550	.....	.....	1125	1750	1925	1625	.....	3475	.....
Lion	2650	3100	3375	4440	5000	5000	5000	750	1175	1500	1750	.....	2375	.....	625	950	1250	1450	.....	1675	.....
Lagerdofer	3825	4750	4925	5000	5000	5000	5000	1750	1900	2225	2750	.....	4200	.....	1500	1200	1725	.....	.....	2125	.....
West Kent	3500	3300	4000	3750	5000	5000	5000	1700	1325	2000	2250	.....	3075	.....	750	750	850	1250	.....	1250	.....
Superior	3250	3000	.....	4450	5000	5000	5000	1650	2000	.....	2500	3000	.....	.....	1500	1625	.....	1320	2000	.....	.....
Rhynoceros	3750	4250	.....	4250	5000	5000	5000	2200	1700	.....	2000	3500	.....	.....	750	1500	.....	1000	1500	.....	.....
Empire	2750	3250	2625	3900	5000	5000	5000	1000	1000	1650	2175	2250	2675	.....	950	725	750	1125	1440	1550	.....
NEAT.										1 CEMENT, 1 SAND.										1 CEMENT, 2 SAND.	
Minneapolis Cement	1250	1250	1200	1900	2250	3175	.....	525	1000	900	1100	1450	1965	.....	400	450	600	800	1160	1725	.....
Louisville	750	1000	1000	1500	2125	4375	.....	575	600	600	1100	1875	2450	.....	375	400	400	800	1200	2000	.....
Milwaukee	750	1000	1000	1650	3000	3000	.....	575	550	700	900	1460	2200	.....	350	350	400	500	800	1550	.....
Mankato	875	1125	1450	1700	.....	2250	.....	450	725	1000	1375	.....	1975	.....	225	500	675	925	.....	1100	.....

NOTE.—No fracture shown on any of the 5,000 lb. tests. Capacity of testing machine only 20,000 lbs.

NOTE.—No fracture shown on any of the 5,000 lb. tests. Capacity of testing machine only 20,000 lbs.

TABLE NO. 37.
WORK DONE BY INSPECTION DEPARTMENT, 1895.

Ward.	Sewer connections.			Water connections.			No. of inspections in 1895.	
	Made prior to 1895.	Made in 1895.	Total.	Made prior to 1895.	Made in 1895.	Total.	Kind.	No.
1	194	16	210	481	45	526	Water.. .. .	1,154
2	424	22	446	800	56	856	Repair.. .. .	544
3	502	49	551	1,499	192	1,691	Sewers.. .. .	392
4	1,070	53	1,123	1,650	100	1,750	Extension.. .. .	70
5	1,134	44	1,178	2,696	74	2,680	Total.. .. .	2,160
6	188	16	204	695	35	730		
7	79	27	106	519	124	643		
8	497	108	605	1,633	221	1,859		
9	115	15	130	586	123	709		
10	28	4	32	224	75	303		
11	229	33	262	687	63	750		
12	9	4	13	101	22	123		
13	1	1	2	105	24	129		
Total, 4,470	392	4,862	11,595	1,154	12,749	3,600 previous to 1895.	Total, 16,349	

COST.

Cost of inspection. Pay rolls.. .. .		\$4,476.43
Paid to city for inspection.. .. .	\$2,015.50	
Paid to city for repaving.	1,379.30	
		3,394.80
Net cost to city of inspection.. .. .		\$1,081.63
Yards of wood paving, 4,443.2.. .. .	\$1,269.43	
Yards of stone paving, 333.. .. .	109.87	
Total.. .. .	\$1,379.30	

TABLE NO. 38.

SIDEWALKS LAID DURING THE SEASON OF 1895.

The whole cost of sidewalks is assessed to abutting property. Property owners are allowed to lay their own walks, subject to the inspection of this department. Men are employed and paid by the lineal foot to lay plank walks not laid by the owners. Stone walks laid by the city are laid by contract.

STREET.	FROM—	TO—	Side.	Width in feet.	Artificial stone laid by owner, feet.	Artificial stone laid by city, feet.	Plank walk laid by owner, feet.	Plank walk laid by city, feet.	Total Length.
1ST WARD—									
Broadway st.	Main st.	2d st.	Both.	6	268				268
Broadway st.	2d st.	5th st.	South.	6	149				149
8th av NE.	Main st.	2d st.	North.	6		346			346
11th av NE.	Marshall st.	Main st.	South.	6		343			343
4th av NE.	Main st.	2d st.	North.	6		149			149
4th st NE.	4th av.	6th av.	East.	6	272				272
5th st NE.	Broadway st.	13th av.	West.	6	647	80			727
15th av NE.	University av	5th st.	Both.	6	332		217		549
Grand st.	13th av NE.	17th av NE.	Both.	6	22				22
Island av, ES of									
Nic. Island.	Grove st.	R. R.	North.	6		130			130
Main st.	8th av NE.	9th av NE.	East.	6		362			362
Main st.	Broadway st.	14th av NE.	Both.	6	805	139			944
Marshall st.	8th av NE.	13th av NE.	West.	6	112				112
2d st NE.	3d av.	5th av.	West.	6	58	22			80
2d st NE.	9th av.	Broadw'y st	West.	6	80	198			278
7th av NE.	2d st.	4th st.	Both.	6	1,060	14			1,074
16th av NE.	Main st.	4th st.	Both.	6	85				85
17th av NE.	Main st.	5th st.	Both.	6	287				287
3d av NE.	Main st.	2d st.	South.	6	185				185
3d av NE.	University av	4th st.	South.	6		370			370
10th av NE.	Marshall st.	2d st.	Both.	6	354				354
13th av NE.	20th av N b'dg	Main st.	Both.	6	1,406	52			1,458
13th av NE.	4th st.	5th st.	North.	6	144				144
University av.	13th av NE.	14th av NE.	Both.	6	33				33
Totals					6,299	2,205	217		8,721
Total cost	of sidewalk	laid by city							\$684.76
2ND WARD—									
Beacon st.	Oak st.	Ontario st.	South.	6	164	160			324
Como av.	13th av SE.	14th av SE.	South.	6	26	154			180
Como av.	15th av SE.	16th av SE.	South.	6	221	198			419
Division st.	10th av SE.	11th av SE.	South.	6			260		260
Erie st.	Dartmo'th av	Wash av SE	West.	6			223	1,427	1,650
8th av SE.	Univ'rsity av	4th st.	East.	6	173				173
8th av SE.	7th st.	8th st.	East.	6		173			173
11th av SE.	Univ'rsity av	5th st.	West.	6	352				352
4th st SE.	12th av.	13th av.	South.	6		152			152
4th st SE.	16th av.	17th av.	South.	6	278				278
14th av SE.	5th av.	6th av.	East.	6	173				173
15th av SE.	Talmadge av	Division st.	West.	6		40			40
2nd av SE.	5th st.	6th st.	East.	6		179			179
6th st SE.	5th av.	6th av.	North.	6	284				284
6th av SE.	River Bridge	Univ'sty av	West.	6	487	416			903
6th st SE.	12th av.	13th av.	South.	6	132				132
7th st SE.	6th av.	7th av.	South.	6	359				359
7th st SE.	11th av.	12th av.	South.	6	160				160
7th st SE.	18th av.	19th av.	North.	6				42	42
16th av SE.	5th st.	7th st.	West.	6	464	35			496
3rd av SE.	5th st.	6th st.	West.	6	179				179
10th av SE.	Univ'rsity av	4th st.	Both.	6	125				125
10th av SE.	7th st.	8th st.	East.	6	90	95			185
12th av SE.	4th st.	5th st.	East.	6	179				179
Wash av SE.	River Bridge	Univ'sty av	North.	6	323		159		482
Totals					4,169	1,602	651	1,469	7,891
Total cost	of sidewalk	laid by city							\$1,283.29

TABLE NO. 38.—Continued.

STREET.	FROM—	TO—	Side.	Width in feet.	Artificial stone laid by owner, feet.	Artificial stone laid by city, feet.	Plank walk laid by owner, feet.	Plank walk laid by city, feet.	Total Length.
3D WARD—									
Aldrich av.	11th av N.	Plym'th av.	West	6	685				685
Aldrich av.	15th av N.	18th av N.	Both	6			55	467	522
Bryant av.	11th av N.	12th av N.	Both	6	337		112	369	818
Bryant av.	12th av N.	Plym'th av.	West	6			74	214	288
Bryant av.	16th av N.	18th av N.	East	6	169		55	184	408
Crystal L'ke av	Irving av.	James av.	North	8		227			227
Dupont av.	6th av N.	8th av N.	East	6				681	681
Dupont av.	11th av N.	12th av N.	Both	6		52		154	206
Dupont av.	Plymouth av.	26th av N.	Both	6	3,719	1,891			5,610
Emerson av.	6th av N.	11th av N.	Both	6			50	748	798
8th av N.	Fremont av.	Humb'tt av	Both	6			167	324	491
8th av N.	Humboldt av.	Elwood av.	North	6				200	200
11th av N.	Bryant av.	Dupont av.	South	6				100	100
11th av N.	Dupont av.	Emerson av	South	6	30				30
11th av N.	Lyndale av.	Bryant av.	North	6	167			158	325
Fremont av	6th av N.	12th av N.	Both	6			100	555	655
Fremont av	20th av N.	21st av N.	West	6	38		165	36	239
4th st N.	5th av.	7th av.	West	8	387	50			437
4th st N.	7th av.	Bassett's Cr	East	8	90				90
4th st N.	Plymouth av.	14th av.	East	6			55		55
4th st N.	18th av.	20th av.	East	6	108	59			167
5th st N.	6th av.	11th av.	Both	8	1,200	678			1,878
5th st N.	11th av.	Plym'th av.	East	6	544				544
5th st N.	Plymouth av.		Both	6	162	158			320
5th st N.	16th av.	17th av.	East	6				55	55
5th st N.	18th av.	20th av.	West	6				275	275
5th st N.	18th av.	20th av.	East	6				123	123
14th av N.	2nd st.	3d st.	North	6	185				185
14th av N.	3d st.	5th st.	Both	6		144			144
14th av N.	Dupont av.	Girard av.	South	6				640	640
15th av N.	Wash av.	3d st.	Both	6	185				185
15th av N.	3d st.	4th st.	South	6				144	144
15th av N.	3d st.	5th st.	North	6			287		287
15th av N.	5th st.	Lyndale av	Both	6			130	140	270
Girard av.	8th av N.	12th av N.	West	6			50	25	75
Hoag av.	6th av N.	8th av n.	Both	6				75	75
Irving av.	Plymouth av.	S line blk 2.							
		Sup. to Cre-							
		peau's Add.	Both	6				277	277
Lyndale av.	6th av N.	8th av N.	Both	6	326	375			701
Lyndale av.	11th av N.	20th av N.	Both	6	4,590	1,134			5,724
Lyndale av.	20th av N.	26th av N.	Both	6	3,048	1,341			4,389
19th av N.	Wash av.	2d st.	Both	6	119				119
19th av N.	James av.	Knox av.	North	6			283		283
Plymouth av.	Lyndale av.	Girard av.	Both	6	1,033	707			1,740
2d st N.	14th av.	15th av.	East	8	177				177
2d st N.	19th av.	20th av.	Both	8	188	174			362
2d st N.	21st av.	22d av.	East	8				175	175
2d st N.	23d av.	24th av.	West	8				156	156
2d st N.	23d av.	24th av.	East	8				30	30
6th av N.	5th st.	6th st.	South	6		184			184
6th st N.	12th av.	14th av.	East	6	329				329
6th st N.	14th av.	15th av.	Both	6	301	110			411
6th st N.	15th av.	16th av.	East	6	114				114
6th st N.	16th av.	20th av.	Both	6	1,037	84			1,121
7th av N.	Wash av.	4th st.	West	6	71				71
7th av N.	3rd st.	4th st.	East	6		175			175
7th av N.	Oak Lake av.	Lyndale av.	South	6				159	159
16th av N.	Wash. av.	2nd st.	Both	6	363	66			429
16th av N.	Wash. av.	3rd st.	South	6	183				183
16th av N.	5th st.	Lyndale av.	South	6				129	129
16th av N.	Aldrich av.	Bryant av.	South	6	167				167
17th av N.	Wash. av.	3rd st.	South	6	183				183
17th av N.	6th st.	Aldrich av.	Both	6				110	110
17th av N.	Aldrich av.	Bryant av.	South	6				162	162
Thomas av.	24th av N.	26th av N.	West	6			406	201	607
Thomas place.	Elwood av.	Logan av.	South	6				404	404
3rd st N.	7th av.	9th av.	South	6	204				204
3rd st N.	10th av N.	Angle.	East	8	488				488
3rd st N.	Plymouth av.	12th av N.	East	6	171				171
3rd st N.	15th av.	17th av.	Both	6	559	180			739
12th av N.	Wash. av.	3rd st.	South	6	365				365
12th av N.	5th st.	6th st.	North	6	54	83			137

TABLE NO. 38.—Continued.

STREET.	FROM—	To—	Side.	Width in feet.	Artificial stone laid by owner, feet.	Artificial stone laid by city, feet.	Plank walk laid by owner, feet.	Plank walk laid by city, feet.	Total Length.
5TH WARD.									
Clinton av.	17th st.	18th st.	East.	6		50			50
Columbus av.	18th st.	Franklin av	East.	6	198	153			351
Chicago av.	9th st.	10th st.	West.	6	202				202
Chicago av.	14th st.	18th st.	East.	6	516				516
Chicago av.	15th st.	16th st.	West.	6	219				219
Chicago av.	17th st.	18th st.	West.	6		120			120
Chicago av.	19th st.	24th st.	East.	6	291				291
8th av S.	Wash. av.	3rd st.	West.	8		15			15
8th st S.	2nd av.	3rd av.	South.	8	78				78
8th st S.	7th av.	8th av.	North.	8	147				147
11th st S.	3rd av.	5th av.	South.	8	250	55			305
18th st.	Nicollet av.	1st av S.	South.	6	140	126			266
18th st.	1st av S.	2nd av S.	North.	6		274			274
18th st.	5th av S.	Portland av	North.	6	148				148
Franklin av.	Stevens av.	5th av S.	North.	6	552	276			828
4th av S.	7th st.	8th st.	West.	8	83				83
4th av S.	Grant st.	14th st.	East.	6		109			109
4th av S.	14th st.	15th st.	West.	6	128				128
4th av S.	15th st.	17th st.	East.	6		115			115
4th av S.	17th st.	18th st.	West.	6	50				50
5th av S.	8th st.	9th st.	East.	8	176	16			194
5th av S.	11th st.	Grant st.	East.	8	88				68
5th av S.	Grant st.	15th st.	West.	6	62	50			112
5th av S.	Franklin av.	22nd st.	East.	6			152		152
5th st S.	4th av.	5th av.	North.	8		125			125
5th st S.	4th av.	6th av.	South.	6	97	360			457
5th st S.	7th av.	8th av.	South.	8	212	12			224
5th st S.	9th av.	10th av.	South.	8		70			70
14th st.	Portland av.	9th av S.	North.	6	169				169
15th st.	Stevens av.	2nd av S.	South.	6		139			139
Grant st.	3rd av S.	5th av S.	North.	6	371				371
9th av S.	4th st.	5th st.	East.	8	212				212
9th av S.	7th st.	8th st.	West.	8	300				300
9th av S.	Franklin av.	21st st.	East.	6			98		98
9th st S.	8th av.	9th av.	Both.	8	396				396
19th st.	Portland av.	Park av.	South.	6	60				60
Oakland av.	22nd st.	24th st.	East.	6			100		100
Portland av.	19th st.	Franklin av	West.	8		50			50
2nd av S.	9th st.	10th st.	West.	8	193				193
2nd av S.	12th st.	13th st.	West.	8	55				55
2nd av S.	Grant st.	16th st.	West.	6	257		100		357
2nd av S.	19th st.	Franklin av	West.	6	175				175
6th st S.	9th av.	10th av.	South.	8	121				121
7th av S.	8th st.	10th st.	East.	8	185	129			314
16th st.	Stevens av.	3rd av S.	North.	6			128		128
17th st.	Clinton av.	4th av S.	South.	6	131				131
17th st.	4th av S.	5th av S.	North.	6		138			138
17th st.	5th av S.	Portland av	South.	6	127				127
17th st.	Portland av.	Park av	Both.	6	51	596	40		687
17th st.	Chicago av.	9th av S.	South.	6				153	153
3rd av S.	6th st.	7th st.	West.	6		14			14
10th av S.	4th st.	5th st.	West.	8	292				292
10th av S.	6th st.	7th st.	West.	8	90	45			135
10th av S.	22nd st.	24th st.	West.	6			50		50
12th st S.	1st av S.	Clinton av.	South.	8	361	55			416
21st st.	9th av S.	10th av S.	South.	6	114				114
22nd st.	Clinton av.	5th av S.	Both.	6	138		127		265
22nd st.	Portland av.	Oakland av	South.	8	146				146
22nd st.	9th av S.	10th av S.	Both.	6			54	50	104
24th st.	4th av S.	Portland av	North.	8	144				144
24th st.	Park av.	Chicago av.	North.	6		39			39
Wash. av S.	8th av.	10th av.	North.	12	360	147			507
Total.					8,027	3,288	212	830	12,397
Total cost	of sidewalk	laid by city							\$1,951.99

TABLE NO. 38.—Continued.

STREET.	FROM—	TO—	Side.	Width in feet.	Artificial stone laid by owner, feet.	Artificial stone laid by city, feet.	Plank walk laid by owner, feet.	Plank walk laid by city, feet.	Total Length.
6TH WARD—									
Cedar av.....	Wash. av.....	3d st.....	Both..	15	137				137
Cedar av.....	Riverside av.....	5th st.....	East..	15	88				88
11th av S.....	2d st.....	Wash. av.....	East..	8				163	163
11th av S.....	3d st.....	5th st.....	East..	8				335	335
11th av S.....	6th st.....	7th st.....	East..	8			116		116
1st st S.....	12th av.....	13th av.....	South..	8			80		80
1st st S.....	13th av.....	14th av.....	Both..	8				66	66
4th st S.....	10th av.....	11th av.....	South..	8	81				81
4th st S.....	13th av.....	15th av.....	Both..	8	179		113	33	325
4th st S.....	15th av.....	16th av.....	North..	8				56	56
4th st S.....	19th av.....	20th av.....	Both..	8				165	165
4th st S.....	20th av.....	21st av.....	North..	8	80				80
4th st S.....	21st av.....	22d av.....	Both..	8			14	146	289
5th st S.....	10th av.....	14th av.....	Both..	8				686	686
5th st S.....	14th av.....	15th av.....	South..	8				232	232
14th av S.....	2d st.....	Wash. av.....	East..	8	171				171
14th av S.....	Railroad.....	6th st.....	Both..	8				71	71
15th av S.....	Wash. av.....	3d st.....	Both..	8		165	171	250	586
15th av S.....	4th st.....	5th st.....	Both..	8				140	140
15th av S.....	5th st.....	Railroad.....	West..	8				171	171
19th av S.....	Bluff st.....	2½ st.....	Both..	8			178	242	420
19th av S.....	2½ st.....	3d st.....	West..	8				40	40
Riverside av.....	21st av S.....	22d av S.....	North..	15		75			75
Riverside av.....	23d av S.....	24th av S.....	North..	15		135			135
2d st S.....	10th av.....	11th av.....	Both..	8		33			33
2d st S.....	11th av.....	12th av.....	North..	8			311		311
2d st S.....	13th av.....	14th av.....	South..	8			66		66
2nd st S.....	14th av.....	Cedar av.....	South..	8	188		33		221
2nd st S.....	Cedar av.....	20th av S.....	South..	8	303	55	69	220	647
2nd st S.....	12th av.....	13th av.....	North..	8			132		132
6th st S.....	10th av.....	11th av.....	Both..	8			271	55	326
6th st S.....	11th av.....	12th av.....	North..	8	61			112	173
6th st S.....	12th av.....	13th av.....	South..	8	139				139
6th st S.....	13th av.....	17th av.....	Both..	8	55	48	220	480	803
6th st S.....	19th av.....	20th av.....	Both..	8	39				39
6th st S.....	21st av.....	Riverside.....	South..	8	66		80		146
7th st S.....	14th av.....	15th av.....	North..	8			110		110
7th st S.....	21st av.....	23rd av.....	North..	8	146			33	179
7th st S.....	Cedar av.....	20th av.....	North..	8	72				72
7th st S.....	23rd av.....	24th av.....	North..	8	33				33
2½ st.....	20th av S.....	21st av S.....	North..	8			146		146
2½ st.....	20th av S.....	21st av S.....	South..	8		106			106
3rd st S.....	10th av.....	13th av.....	South..	8	147				147
3rd st S.....	14th av.....	Cedar av.....	Both..	8	349	136			485
3rd st S.....	Cedar av.....	21st av S.....	South..	8			241		241
12th av S.....	1st st.....	2d st.....	East..	6			181		181
12th av S.....	2nd st.....	Wash. av.....	East..	8			336		336
12th av S.....	Wash. av.....	3rd st.....	East..	8	80				80
12th av S.....	4th st.....	5th st.....	Both..	8				30	30
12th av S.....	5th st.....	6th st.....	West..	8	342				342
12th av S.....	6th st.....	7th st.....	West..	8			50		50
12th av S.....	6th st.....	7th st.....	East..	8	138	33			171
13th av S.....	2nd st.....	3rd st.....	East..	8				78	78
20th av S.....	Wash. av.....	2½ st.....	Both..	8				292	292
20th av S.....	2½ st.....	3rd st.....	West..	8			168	19	187
20th av S.....	3rd st.....	4th st.....	East..	8			179	131	310
20th av S.....	4th st.....	Riverside.....	West..	8				79	79
20th av S.....	6th st.....	7th st.....	East..	8	32				32
21st av S.....	2½ st.....	3rd st.....	West..	8		177			177
21st av S.....	Wash. av.....	4th st.....	Both..	8	204		171	232	607
21st av S.....	4th av.....	5th st.....	West..	8				27	27
21st av S.....	6th st.....	7th st.....	Both..	8	171			171	342
Total.....					3,301	963	3,565	4,755	12,584
Total cost of sidewalk laid by city.....									\$2,534.49

TABLE NO. 38.—Continued.

STREET.	FROM—	TO—	Side.	Width in feet.	Artificial stone laid by owner, feet.	Artificial stone laid by city, feet.	Plank walk laid by owner, feet.	Plank walk laid by city, feet.	Total Length.
7TH WARD.									
Bloomingt'n av	26th st.	Lake st.	Both	8	2,097	1,395			3,492
Cedar av	24th st.	Lake st.	West	8	2,197	616			2,813
Cedar av	Lake st.	36th st.	Both	8	1,872	1,241			3,113
Chicago av	24th st.	Lake st.	East	6	453	526			979
11th av S.	25th st.	26th st.	Both	6	321	269		593	1,183
18th av S.	28th st.	Lake st.	Both	6				2,061	2,061
14th av S.	25th st.	26th st.	Both	6	178	154			332
14th av S.	26th st.	28th st.	West	6	673	176			849
15th av S.	25th st.	26th st.	East	6	362	87			449
Longfellow av.	Lake st.	35th st.	Both	6	541		75	4,085	4,701
Lake st.	9th av S.	10th av S.	Both	8		555			555
9th av S.	27th st.	Lake st.	West	6	1,528	862			2,390
16th av S.	Lake st.	34th st.	Both	6	205	991			1,196
10th av S.	33rd st.	31th st.	West	6				408	408
10th av S.	34th st.	35th st.	West	6				608	608
24th st.	9th av S.	12th av S.	South	6	308	94			492
25th st.	9th av S.	10th av S.	South	6		275			275
25th st.	11th av S.	17th av S.	North	6	537				537
36th st.	Chicago av.	10th av S.	Both	6				528	528
Total					11,362	7,241	75	8,283	26,961
Total cost	of sidewalks	laid by city							\$6,399.84
8TH WARD—									
Aldrich av	24th st.	25th st.	East	6				281	281
Bryant av	25th st.	26th st.	Both	6	117			514	631
Blaisdell	26th st.	29½ st.	Both	8	282	45			327
Bryant av	Franklin av.	22d st.	East	6	299	296			595
Chicago av	31st st.	32d st.	West	6				16	16
Colfax av.	26th st.	27th st.	East	6	363			769	1,132
Chicago av.	24th st.	Lake st.	West	6	707	135			842
Dupont av.	27th st.	28th st.	East	6				31	31
Dupont av.	28th st.	H. & D. R'y	East	6	45		128	357	530
Dupont av.	H. & D. R'y	32d st.	Both	6	182	54		1,213	1,449
Dupont av.	22nd st.	Franklin av	Both	6	201	291	168		660
Fremont av.	22nd st.	24th st.	East	6				120	120
1st av S.	24th st.	25th st.	East	6		175			175
1st av S.	25th st.	28th st.	East	6	104	169			273
1st av S.	28th st.	29th st.	Both	6	140	90			230
1st av S.	29th st.	Lake st.	East	6	42	132			174
4th av S.	24th st.	25th st.	West	6		269			269
5th av S.	28th st.	Lake st.	East	6	43		172	664	879
Girard av.	Franklin av.	22d st.	West	6		260			260
Girard av.	22d st.	25th st.	West	6	885	265			1,150
Girard av.	24th st.	25th st.	East	6		120			120
Grand av.	25th st.	26th st.	West	6				596	596
Grand av.	28th st.	H. & D. R'y	Both	6	120				120
Lake st.	Stevens av.	2d av S.	North	8		140			140
Lake st.	Blaisdell av.	Pillsb'y av.	South	6		84			84
Lake st.	Lyndale av.	Aldrich av.	North	6		133			133
Lake st.	Aldrich av.	Bryant av.	South	6		273			273
Lyndale av.	Lake st.	31st st.	West	6	50	359			409
Lyndale av.	31st st.	32d st.	West	6		46			46
Nicollet av.	26th st.	Lake st.	West	8	353	190			543
Nicollet av.	Lake st.	33d st.	East	8	1,139	443			1,582
Pillsbury av.	26th st.	27th st.	East	6		80			80
Pleasant av.	26th st.	Lake st.	Both	8	85	135			220
Pleasant av.	Lake st.	31st st.	West	8	56	198			254
Pleasant av.	31st st.	33d st.	West	6	385			42	427
Pleasant av.	31st st.	33d st.	East	6	391	89			480
Portland av.	27th st.	28th st.	East	8	66				66
Portland av.	25th st.	29th st.	East	8		82			82
Portland av.	H. & D. R'y	Lake st.	East	8	82	41			123
Portland av.	Lake st.	31st st.	Both	8	569	95			664
Queen av.	Franklin av.	24th st.	East	6	45	219			264
Stevens av	Lake st.	32d st.	Both	6	521	184			705
2d av S.	26th st.	29th st.	Both	6	957	986			1,943
2d av S.	33d st.	34th st.	Both	6	699	135			834
3d av S.	25th st.	26th st.	West	6		31			31
3d av S.	26th st.	27th st.	East	6			50	100	150
3d av S.	27th st.	28th st.	West	6	95			45	140
24th st.	1th av S.	5th av S.	South	6			277		277
25th st.	1st av S.	Stevens av.	South	6		130			130

TABLE NO. 38.—Continued.

STREET.	FROM—	To—	Side.	Width in feet.	Artificial stone laid by owner, feet.	Artificial stone laid by city, feet.	Plank walk laid by owner, feet.	Plank walk laid by city, feet.	Total Length.
8TH WARD—									
26th st.	Nicollet av.	Stevens av.	Both.	15	138	141			279
26th st.	Colum's av.	Chicago av.	North.	6	138			126	264
26th st.	Blaisdell av.	Pillsb'y av.	South.	6	179				179
27th st.	Nicollet av.	Blaisdell av.	South.	6	199				199
28th st.	Nicollet av.	2d av S.	North.	8	557	218			775
28th st.	Blaisdell av.	Pleasant av.	North.	8	391				391
29th st.	Nicollet av.	Blaisdell av.	South.	6	116				116
31st st.	Pleasant av.	Calhoun bl.	North.	6	688			2,289	2,977
31st st.	Nicollet av.	1st av S.	North.	6		130			130
31st st.	Stevens av.	2d av S.	Both.	6	141				141
32d st.	Clinton av.	4th av S.	North.	8				274	274
32d st.	Girard av.	Harriet av.	North.	8				263	263
Totals.					11,370	6,863	795	7,700	26,728
Total cost	of sidewalk	laid by city							\$5,952.49
9TH WARD—									
Broadway st.	5th st NE.	V'nBuren st	South.	6	251	163			414
18½ av NE.	Polk st.	Fillmore st.	North.	6	460	223			683
4th av NE.	Adams st.	Madison st.	Both.	6	276	80			356
5th st NE.	Spring st.	17th av NE.	East.	6	40				40
Jackson st.	Summer st.	Broadw'y st	East.	8	323	80			403
Jackson st.	Spring st.	Summer st.	West.	6	160	240			400
Jackson st.	25th av NE.	27th av NE.	Both.	6	325	881			1,206
Jefferson st.	4th av NE.	18th av NE.	Both.	6	1,714	80			1,794
Monroe st.	3rd av NE.	Broadw'y st	Both.	6		120			120
Monroe st.	Broadway st.	17th av NE.	West.	6	294	430			724
Monroe st.	24th av NE.	27th av NE.	Both.	6	695	1,421			2,116
Madison st.	3rd av NE.	Broadw'y st	Both.	6	59				59
Pierce st.	22nd av NE.	23rd av NE.	West.	6	506	80			586
Polk st.	Spring st.	Summer st.	West.	6	122	157			279
Quincy st.	3rd av NE.	Broadw'y st	Both.	6	225				225
Quincy st.	23rd av NE.	27th av NE.	Both.	6	40				40
Spring st.	5th st NE.	Monroe st.	Both.	6	138				138
Spring st.	Harrison st.	Lincoln st.	Both.	6	705	192			897
Summer st.	5th st NE.	Johnson st.	Both.	6	1,392	262			1,654
Taylor st.	18th av NE.	19th av NE.	Both.	6	132	217			349
Taylor st.	17th av NE.	18th av NE.	Both.	6	510	405			915
20th av NE.	Jackson st.	Monroe st.	South.	6	174				174
24th av NE.	Jackson st.	Madison st.	Both.	6	645	131			776
25th av NE.	Washington st	Monroe st.	Both.	6	390	937			1,327
Washington st.	Spring st.	18th av NE.	Both.	6	3,657	873			4,540
Totals.					13,243	6,972			20,215
Total cost	of sidewalks	laid by city							\$4,000.57
10TH WARD—									
Bryant av.	29th av N.	30th av N.	Both.	6	160		1,050		1,210
Dupont av.	29th av N.	32nd av N.	Both.	6	646		45	1,590	2,281
4th st N.	26th av.	29th av N.	East.	6	98			1,059	1,157
James av.	29th av N.	32nd av N.	Both.	6	49		90	1,075	1,214
Lyndale av.	26th av N.	29th av N.	West.	6	769	358			1,127
Lyndale av.	29th av N.	32nd av N.	Both.	6	214		114	1,957	2,285
2nd st N.	32nd av.	33rd av.	East.	6	46			561	607
27th av N.	3rd st.	4th st.	North.	6				159	159
29th av N.	Emerson av.	Girard av.	Both.	6				521	521
30th av N.	Russell av.	Morgan av.	Both.	6				2,661	2,661
31st av N.	1st st.	2nd st.	North.	6			266	161	427
31st av N.	3rd st.	Lyndale av	Both.	6	40		153	1,890	2,083
Total.					2,022	358	668	12,684	15,732
Total cost	of sidewalks	laid by city.							\$3,160.35

SUMMARY—TABLE NO. 38.

WARDS.	Artificial stone laid by owner.	Artificial stone laid by city.	Plank walk laid by owner.	Plank walk laid by city.	Total length.
	Ft. 100ths.	Ft. 100ths.	Ft. 100ths.	Ft. 100ths.	Ft. 100ths.
First	6,299.00	2,205.00	217.00	.....	8,721.00
Second.....	4,169.00	1,602.00	651.00	1,469.00	7,891.00
Third	24,519.00	8,445.00	3,648.00	8,993.00	45,605.00
Fourth.....	8,086.00	4,438.00	237.00	660.00	13,421.00
Fifth.....	8,067.00	3,288.00	212.00	830.00	12,397.00
Sixth.....	3,301.00	963.00	3,565.00	4,755.00	12,584.00
Seventh.....	11,362.00	7,241.00	75.00	8,283.00	26,961.00
Eighth.....	11,370.00	6,863.00	795.00	7,700.00	26,728.00
Ninth.....	13,243.00	6,972.00	.....	.....	20,215.00
Tenth.....	2,022.00	358.00	668.00	12,684.00	15,732.00
Eleventh.....	3,775.00	39.00	627.00	289.00	4,721.00
Twelfth.....	562.00	.....	1,597.00	2,915.00	5,074.00
Thirteenth.....	399.00	511.00	133.00	7,533.00	8,576.00
Grand Totals.....	97,174.00	42,925.00	12,425.00	56,102.00	208,626.00
Total in miles.....	18.40	8.13	2.35	10.63	39.51
Total cost of sidewalk laid by city.....					\$37,940.59

RATE OF ASSESSMENT PER LINEAL FOOT.

Width Feet.	Kind.	Rate.
4	Plank	\$0.20
6	Plank .....	.25
8	Plank .....	.30
12	Plank .....	.40
6	Artificial stone.....	.54
8	Artificial stone.....	.72
12	Artificial stone.....	1.07
15	Artificial stone.....	1.29
15	Artificial stone.....	1.56

TABLE NO. 39.
SIDEWALKS ORDERED FOR 1896.

STREET.	From—	To—	Side.	Width, Feet.	No. of Descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial Stone.	Plank.	Artificial Stone.	Plank.
1st WARD—									
Broadway st.	Main st.....	5th st.....	South.	6	9	1,185.9		\$640.38	
Broadway st.	3rd st.....	Univ'ty av.	North.	6	4	346.5		187.10	
8th av NE.	Ramsey st.....	Marshall st	Both.	6	4	605.7		327.07	
8th av NE.	Main st.....	2nd st.....	North.	6	1	340.5		183.87	
8th av NE.	Univ'rsity av	5th st.....	North.	6	4	704		380.16	
11th av NE.	Marshall st.	Main st.....	South.	6	4	345		186.30	
1st av NE.	Main st.....	2nd st.....	Both.	6	3	344		185.76	
4th av NE.	Main st.....	2nd st.....	North.	6	1	115		62.10	
4th st NE.	2nd av.....	3rd av.....	West.	6	1	72		38.88	
4th st NE.	6th av.....	8th av.....	Both.	6	24	1,618		873.72	
4th st NE.	Broadway st.	12th av.....	West.	6	3	353.5		190.89	
4th st NE.	Broadway st.	17th av.....	East.	6	43	1,841.5		994.41	
4th st NE.	18th av.....	19th av.....	Both.	6	12	541.5		292.41	
5th av NE.	Marshall st.	Main st.....	Both.	6	3	512		276.48	
5th av NE.	2nd st.....	Univ'ty av.	Both.	6	4	695.5		375.57	
5th av NE.	Univ'rsity av	4th st.....	North.	6	3	181		97.74	
5th av NE.	4th st.....	5th st.....	Both.	6	4	704		380.16	
*5th st NE.	Railroad.....	1st av.....	West.	6					
5th st NE.	13th av.....	18th av.....	West.	6	42	1,657.2		894.89	
15th av NE.	3rd st.....	4th st.....	Both.	6	10	1,109		598.86	
15th av NE.	4th st.....	5th st.....	South.	6	1	138.5		74.79	
Grand st.	13th av NE.	18th av NE.	East.	6	29	1,834		990.37	
Island av.	Bridge st.....	Grove st.....	West.	6	3	352		190.08	
Main st.	Broadway st.	13th av NE.	East.	6	7	701.5		378.81	
Main st.	13th av NE.	15th av NE.	Both.	6	10	772.5		417.15	
Main st.	16th av NE.	17th av NE.	East.	6	7	349		188.46	
Marshall st.	14th av NE.	18th av NE.	Both.	6	49	2,912.9		1,573.12	
Nicollet st.	Railroad.....	Maple st.....	Both.	6	9	370.7		200.18	
9th av N E.	Marshall st.	Main st.....	Both.	6	6	657.4		354.99	
9th av N E.	Main st.....	2d st.....	North.	6	2	334.5		180.63	
9th av N E.	2d st.....	Univ. av.....	Both.	6	5	659.5		356.34	
19th av N E.	2d st.....	Univ. av.....	North.	6	2	288.5		128.79	
Ramsey st.	6th av N E.	7th av N E.	East.	6	7		475		118.75
2d st.	10th av N E.	Roadway st	Both.	6	3	288.9		156.00	
2d st.	Central av.	1st av N E.	West.	12	1	44		45.76	
6th av N E.	Main st.....	2d st.....	South.	6	1	171		91.34	
6th av N E.	2d st.....	Univ. av.....	Both.	6	3	346		186.84	
6th av N E.	University av	5th st.....	South.	6	6	511		275.94	
7th av N E.	Sibley st.....	Marshall st.	South.	6	10	658		355.52	
7th av N E.	Main st.....	2d st.....	North.	6	1	176.8		95.47	
7th av N E.	2d st.....	Univ. av.....	South.	6	2	200		108.00	
7th av N E.	Main st.....	Marshall st.	Both.	6	5	679.6		366.98	
16th av N E.	Main st.....	4th st.....	Both.	6	32	2,574.6		1,390.22	
17th av N E.	Main st.....	Univ. av.....	Both.	6	15	2,002		1,081.08	
17th av N E.	4th st.....	5th st.....	North.	6	2	275.8		148.94	
3d av N E.	2d st.....	3d st.....	South.	6	1	163		88.02	
*3d av N E.	University av	4th st.....	South.	6					
3d st N E.	Broadway st.	12th av N E.	East.	6	4	302.7		163.46	
3d st N E.	14th av.....	15th av.....	East.	6	4	343		185.22	
3d st N E.	20th av.....	23d av.....	Both.	6	33	1,646.9		889.52	
3d st N E.	23d av.....	25th av.....	West.	6	12	668		360.72	
10th av N E.	Main st.....	Marshall st.	Both.	6	2	329.6		177.98	
12th av N E.	3d st.....	Univ. av.....	Both.	6	11	698		376.92	
12th av N E.	University av	4th st.....	South.	6	5	343		185.22	
13th av NE.	Bridge.....	Ramsey st	South.	6	3	639.5		345.33	
13th av NE.	Ramsey st.....	Marshall st.	North.	6	3	170.3		91.96	
13th av NE.	2nd st.....	Main st.....	South.	6	2	345		186.30	
13th av NE.	2nd st.....	3rd st.....	South.	6	5	343		185.22	
13th av NE.	University av	4th st.....	South.	6	6	336		181.44	
20th av NE.	2nd st.....	3rd st.....	Both.	6	8	680		367.20	
22nd av NE.	2nd st.....	3rd st.....	Both.	6	4	660		356.40	
23rd av NE.	2nd st.....	5th st.....	North.	6	15	1,263.8		682.46	
25th av NE.	Main st.....	5th st.....	North.	6	13	1,598.6		863.26	
Univ'y av NE	Broadway st.	12th av.....	East.	6	3	341		185.22	
Univ'y av NE	12th av.....	14th av.....	Both.	6	9	1,029		555.66	
Univ'y av NE	17th av.....	18th av.....	East.	6	4	207.5		112.05	
Univ'y av NE	20th av.....	22nd av.....	West.	6	8	329.5		177.93	
Univ'y av NE	20th av.....	25th av.....	East.	6	20	1,476		797.04	
Totals						44,435.9	475	24016.88	\$118.75

*Not assessed. #All built.

TABLE NO. 39.—Continued.

STREET.	FROM—	To—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank
2D WARD—									
Bedford st...	Univ. av SE.	Hamlin av.	East...	6	28	1,183.2		\$639.23	
4th st SE.	9th av.	10th av.	South	6	5	358		193.32	
4th st SE.	Railroad.	14th av.	West.	6	1	152		82.08	
5th av SE.	7th st.	9th st.	West.	6	5	531.8		287.17	
Oak st	Fulton st.	River.	West.	6	5	411.1		222.00	
Oak st.	Essex st	Univ av SE.	East...	6	18	1,178.7		636.50	
Orlin av.....	Arthur av.	Malcom av.	East...	6	3	153		82.62	
2d av SE.	7th st.	8th st.	West.	6	1	96.5		52.11	
7th st SE.	4th av.	5th av.	North.	6	2	312.6		168.81	
Talmadge av	12th av SE	13th av SE.	North.	6	1	141.4		76.36	
Univ'y av SE	19th av	Oak st	North.	6	7	583.8		315.25	
Wash av SE..	Univ av.	Erie st	North.	6	2	178		96.12	
Totals						5,280.1		\$2851.57	
3RD WARD—									
Aldrich av ...	Plymouth av.	12th av N.	West.	6	1	107		57.78	
Aldrich av	Plymouth av.	14th av N.	East.	6	4	223.5		120.69	
Aldrich av	17th av N.	18th av N.	West.	6	3	192.8		104.11	
Bradford av..	7th av N.	8th av N.	West.	6	2	105.4		56.92	
Bryant av.....	8th av N.	11th av N.	West.	6	28		755.1		188.78
Bryant av.....	Plymouth av.	14th av N.	East.	6	4	270		145.80	
Dupont av.....	Plymouth av.	15th av N.	East.	6	5	284.5		153.63	
Dupont av.....	18th av N.	20th av N.	West.	6	1	116		62.64	
Dupont av.....	20th av N.	26th av N.	Both.	6	35	1,811.8		978.37	
18th av N.....	Lyndale av.	Aldrich av.	Both.	6	3	326		176.04	
18th av N.....	Emerson av.	Girard av.	North.	6	7		659.7		164.94
4th st N.....	5th av	6th av	East.	8	5	350		252.00	
4th st N.....	6th av	7th av	East.	8	2	112.5		81.00	
4th st N.....	7th av.	9th av	Both.	8	10	1,672		1,203.84	
4th st N.....	18th av	20th av	Both.	6	10	644		347.76	
4th st N.....	20th av	21st av	East.	6	6	330.5		178.47	
4th st N.....	21st av N.	23rd av N.	Both.	6	15		1,511.9		378.00
4th st N.....	24th av	25th av	East.	6	4		174.5		43.63
5th st N.....	10th av	11th av	Both.	8	3	155		111.60	
5th st N.....	11th av N.	12th av N.	East.	6	8	316.2		170.75	
5th st N.....	12th av	Plym'th av.	Both.	6	3	667		360.18	
5th st N.....	Plymouth av.	14th av	East.	6	2	110.6		59.72	
5th st N.....	18th av	20th av	Both.	6	2	55		29.70	
14th av N.....	Fremont av.	Girard av	South.	6	2		333		83.26
15th av N.....	Dupont av	Girard av	North.	6	6		956.4		239.08
Fremont av...	Plymouth av.	20th av N.	East.	6	44		2,282.6		570.69
Fremont av.	15th av N.	20th av N.	West.	6	32		1,047.9		262.01
Girard av.....	14th av N.	18th av N.	West.	6	20		991.4		247.87
Girard av.....	22d av N.	25th av N.	East.	6	22		1,050		262.53
Humboldt av.	11th av N.	Plym'th av.	East.	6	19		786		196.52
Logan av.....	25th av N.	26th av N.	West.	6	6		269		67.26
Lyndale av...	8th av N.	11th av N.	Both.	6	46	1,845.1		996.35	
Newton av...	17th av N.	19th av N.	West.	6	16		774.3		193.60
9th av N.....	2d st.	3d st	South.	6	3	530		286.20	
Plymouth av.	Aldrich av	Bryant av.	South.	6	2	117		63.18	
Plymouth av.	Fremont av.	Girard av	North.	6	2	88		47.52	
Queen av.....	6th av N.	8th av N.	Both.	6	29		1,231		307.77
6th av N.....	6th st.	Hoag av	North.	6	1	54.1		29.21	
6th st N.....	Plymouth av.	14th av.	East.	6	2	213.6		115.34	
6th st N.....	14th av	15th av.	Both.	6	5	275		148.50	
6th st N.....	17th av	18th av.	West.	6	1	55		29.70	
6th st N.....	18th av N.	20th av N.	Both.	6	24	883.4		477.03	
6th st N.....	21st av	23d av	Both.	6	15		1,438.5		359.63
16th av N.....	Lyndale av.	Aldrich av.	Both.	6	4		653		163.24
16th av N.....	Dupont av.	Emerson av	Both.	6	3		475.2		118.79
17th av N.....	Dupont av.	Fremont av	South.	6	4		546.1		136.51
3d st N.....	7th av.	8th av.	East.	8	2	377.1		271.51	
3d st N.....	7th av.	9th av.	West.	8	2	573.5		412.92	
12th av N.....	5th st.	6th st.	North.	6	1	131.5		71.01	
12th av N.....	Dupont av.	Emerson av	North.	6	2		327		81.76
12th av N.....	Emerson av.	Fremont av	South.	6	2	78.6		42.44	
12th av N.....	Fremont av.	Girard av.	North.	6	7	411.2		222.06	
20th av N.....	2d st.	Wash av.	North.	18	1	55		86.99	
20th av N.....	3d st.	4th st.	South.	8	4	107		77.04	
20th av N.....	6th st.	Lyndale av	North	8	1	41		29.52	

TABLE NO. 39.—Continued.

STREET.	FROM—	To—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
20th av N.....	Dupont av....	Emerson av	South.	6	2	122.5		66.15	
23d av N.....	Bryant av....	Fremont av	South.	6	6		971		242.73
24th av N.....	Wash av.....	3d st.....	Both.	6	4		574.5		143.62
25th av N.....	James av....	Logan av....	South.	6	9		454		113.62
26th av N.....	James av....	Penn av....	South.	6	32		1,758.7		439.70
26th av N.....	Crystal Lk av	Upton av....	South.	6	2		268		67.02
Upton av.....	McNair av....	26th av N...	West..	6	36		1,501.6		375.42
Totals.....						13,808.4	21,790.9	\$8123.58	\$5447.98
4TH WARD—									
Aldrich av....	Western av....	1st av N.....	West..	6	4	537.5		\$290.25	
Aldrich av....	5th av N.....	6th av N....	East.	6	8	497		268.38	
Bryant av....	Western av....	3rd av N....	Both.	6	1	21		11.34	
Bryant av....	3rd av N.....	4th av N....	West.	6	2	144.5		78.03	
Colfax av....	Western av....	2nd av N....	West.	6	4	301.4		162.76	
Chestnut av..	12th st.....	15th st.....	South.	6	1	50		27.00	
11th av N.....	Western av....	Holden st...	East.	6	1	153.5		82.89	
*1st av N.....	6th st.....	7th st.....	West.	15					
4th av N.....	Lyndale av....	Bryant av....	North.	6	3	295.7		159.68	
4th av N.....	Bryant av....	Colfax av....	South.	6	2	279.9		151.15	
Fremont av....	Western av....	2nd av N....	Both.	6	19	723.1		390.47	
5th av N.....	Lyndale av....	Aldrich av....	Both.	6	4	305.2		164.81	
5th av N.....	Irving av....	Knox av....	North.	6	8	386.6		208.76	
5th av N.....	James av....	Knox av....	South.	6	2	128.9		69.61	
5th st N.....	2nd av.....	3rd av.....	West.	8	3	138		99.36	
W. 15th st....	Spruce place.	Oak Gr'v st	South.	6	1	59.3		32.02	
Girard av....	Western av....	2nd av N....	West.	6	2	169.2		91.37	
Girard av....	Western av....	6th av N....	Both.	6	17	745.8		402.73	
Groveland av	Nicollet av...	Vine place.	South.	6	2	336		181.44	
Hennepin av.	5th st.....	6th st.....	South.	18	1	142.8		225.62	
Highland av.	Royalston av	Roy'lst'n av	East.	6	5	190		102.60	
Holden st....	R. R. bridge..	Border av....	Both.	6	4	270		145.80	
Hoag av.....	Royalston av	6th av N....	West.	6	1	121		65.34	
Irving av....	4th av N.....	5th av N....	West.	6	9	307		165.78	
James av....	Western av....	6th av N....	Both.	6	46	1,858		1,003.32	
Linden av....	Lyndale av....	17th st.....	South.	6	1	102.5		55.35	
+Lyndale av..	Western av....	6th av N....	East.	6					
+Lyndale av..	3rd av N.....	5th av N....	West.	6					
Morgan av....	Western av....	6th av N....	East.	6	24		980.8		245.20
Newton av....	Western av....	5th av N....	West.	6	15	843.6		455.54	
Royalston av	Holden st.....	6th av N....	Both.	6	15	800.8		432.43	
+Spruce Place	Grant st....	14th st.....	West.	6					
2nd av N.....	5th st.....	6th st.....	Both.	8	4	311.5		224.28	
6th av N.....	Hoag av.....	Lyndale av.	South.	6	8	355.0		191.70	
6th av N.....	Aldrich av....	Bryant av....	South.	6	1	38.1		20.57	
6th av N.....	Dupont av....	Emerson av.	South.	6	3	140.7		75.98	
6th av N.....	Girard av....	Humboldt..	South.	6	5	230.8		124.63	
17th st.....	Linden av....	Hawthorn..	East.	6	1	150		81.00	
3rd av N.....	Bryant av....	Colfax av....	Both.	6	9	511.4		276.16	
N 12th st....	Chestnut av..	Linden av....	West.	6	1	143.5		77.49	
+Vine Place..	17th st.....	Groveland..	East.	6					
+Vine Place..	Clinton av....	Groveland..	West.	6					
Western av....	R. R. Bridge	12th st.....	South.	11	1	24.0		23.76	
Western av....	R. R. Bridge	Border av....	North.	6	3	54.4		29.38	
Western av....	Lyndale av....	James av....	Both.	6	98	4,029.5		2,175.93	
Willow st....	Harmon Pl'ce	Yale Place.	East.	6	1	159.5		86.13	
Yale Place...	Spruce Place.	Willow st...	North.	6	1	102.5		55.35	
Totals.....						16,159.2	980.8	8,966.19	245.20

†All built. *Re-assessed.

TABLE NO. 39—Continued.

STREET.	From—	To—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet	Artificial stone.	Plank.
5TH WARD.									
Chicago av.	17th st.	18th st.	West	6	1	173.5		\$93.69	
Chicago av.	19th st.	Franklin av	East	6	4	214		115.56	
Chicago av.	Franklin av.	22d st.	West	6	5	373		201.42	
Chicago av.	22d st.	24th st.	East	6	1	370		199.80	
Clinton av.	22d st.	Franklin av	West	6	1	156.7		84.62	
Clinton av.	22d st.	24th st.	Both	6	7	330		178.20	
8th st.	2d av S.	3d av S.	North	8	1	73		52.56	
8th st.	5th av S.	6th av S.	South	8	2	82.5		59.40	
8th st.	7th av S.	8th av S.	South	8	1	84.5		60.84	
11th st.	4th av S.	6th av S.	North	8	7	418		300.96	
18th st.	Stevens av.	1st av S.	South	6	2	270.5		146.07	
Franklin av.	3d av S.	Clinton av.	North	6	1	135		72.90	
Franklin av.	9th av S.	10th av S.	South	8	1	40		28.80	
1st av S.	10th st.	11th st.	East	8	1	171		123.12	
1st av S.	18th st.	19th st.	West	6	2	75		40.50	
4th av S.	5th st.	6th st.	East	8	2	106		76.32	
4th av S.	10th st.	11th st.	Both	8	5	527		379.44	
4th av S.	19th st.	Franklin av	Both	6	2	107.5		58.05	
4th av S.	Franklin av.	22d st.	East	6	2	62		33.48	
5th st.	7th av.	8th av.	South	8	2	138		99.36	
5th av S.	5th st.	6th st.	West	8	1	72		51.84	
5th av S.	7th st.	8th st.	West	8	1	171		123.12	
5th av S.	14th st.	15th st.	East	6	1	158.5		85.59	
5th av S.	18th st.	19th st.	East	6	1	50		27.00	
14th st.	Park av.	Chicago av.	Both	6	2	138		74.52	
15th st.	Park av.	Chicago av.	North	6	4	156		84.24	
Grant st.	Nicollet av.	1st av S.	South	6	1	40		21.60	
Grant st.	1st av S.	Stevens av.	Both	6	2	205.6		111.02	
Grant st.	2nd av S.	3rd av S.	South	6	1	135.8		73.33	
Grant st.	3rd av S.	Clinton av.	North	6	1	220.3		118.96	
9th av S.	5th st.	6th st.	West	8	1	171		123.12	
9th av S.	19th av.	21st av.	West	6	3	217		117.18	
19th st.	Clinton av.	4th av S.	North	6	1	130.5		70.47	
19th st.	2nd av S.	3rd av S.	South	6	2	266.5		143.91	
19th st.	Nicollet av.	1st av S.	South	6	2	273.5		147.60	
*Oakland av.	Franklin av.	22nd st.	West	6	.....	.....		.....
Portland av.	18th st.	Franklin av	West	8	2	102.5		73.80	
2nd av S.	16th st.	17th st.	East	6	1	47.5		25.65	
2nd av S.	Franklin av.	22nd st.	West	6	1	50		27.00	
6th av S.	6th st.	7th st.	East	8	2	165		118.80	
6th st.	8th av S.	10th av S.	South	8	4	245		176.40	
7th st.	8th av S.	9th av S.	North	8	2	152		109.44	
7th av S.	7th st.	8th st.	West	8	1	152.5		109.80	
16th st.	1st av S.	Stevens av	Both	6	2	206.1		111.29	
17th st.	Portland av.	Park av.	Both	6	3	788.4		425.74	
3rd av S.	7th st.	9th st.	East	8	2	236.7		170.43	
3rd av S.	9th st.	10th st.	West	8	2	171		123.12	
3rd av S.	11th st.	12th st.	East	8	1	65		46.80	
3rd av S.	12th st.	Grant st.	East	8	1	154.5		111.24	
3rd av S.	12th st.	Grant st.	West	20	3	65.5		114.63	
3rd av S.	19th st.	Franklin av	Both	6	10	528		285.12	
10th st.	7th av S.	8th av S.	North	6	1	143		77.22	
10th av S.	6th st.	7th st.	West	8	1	44.5		32.04	
Totals						9,630.1		5,917.20	

*All built.

TABLE NO. 39.—Continued.

STREET.	FROM—	To—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
6TH WARD—									
Cedar av	1st st.	2nd st.	East	6	1	36		\$19.44	
Cedar av	3rd st.	Wash'g'n av	West	15	1	37		48.47	
Cedar av	Riverside av.	5th st.	East	15	4	Arches		449.50	
Cedar av	5th st.	6th st.	West	15	1	Arches		337.85	
1st st.	13th av S.	14th av S.	North.	8	1		55		16.50
1st st.	Cedar av	19th av S.	North.	8	8		324.5		97.35
4th st.	13th av S.	16th av S.	North.	8	11	373.5		268.92	
4th st.	21st av S.	22nd av S.	South.	8	3		99		29.70
5th st.	10th av S.	11th av S.	North.	8	2	116		83.52	
5th st.	11th av S.	14th av S.	South.	8	11	576		414.72	
5th st.	16th av S.	Cedar av.	North.	8	2	116		83.52	
5th st.	Cedar av.	19th av.	South.	8	1	40		28.80	
5th st.	Cedar av.	19th av.	North.	15	1	Arches		340.87	
5th st.	19th av S.	21st av S.	Both	8	10	509		366.48	
14th av S.	1st st.	2nd st.	East	8	1		179		53.70
14th av S.	W'shing't'n av	3rd st.	West	8	1	165		118.80	
14th av S.	3rd st.	4th st.	East	8	2	124		89.28	
15th av S.	W'shing't'n av	3rd st.	East	8	1	165		118.80	
15th av S.	6th st.	Railroad.	West	8	2		61		18.30
19th av S.	Bluff st.	2nd st.	Both	8	8		320.3		96.09
19th av S.	W'shing't'n av	3rd st.	West	8	4		422		126.60
19th av S.	5th st.	6th st.	West	8	1		20		6.00
19th av S.	6 h st.	7th st.	West	8	1	50		36.00	
Riverside av.	22nd av S.	6th st.	South.	15	1	52		68.12	
Riverside av.	22nd av S.	23rd av S.	South.	15	3	115.2		150.90	
2nd st.	10th av S.	11th av S.	South.	15	1	Arches		135.00	
2nd st.	14th av S.	Cedar av.	North.	8	1	54.3		39.10	
2nd st.	19th av S.	20th av S.	South.	8	1	55		37.40	
6th st.	10th av S.	11th av S.	Both	8	3		190		57.00
6th st.	13th av S.	14th av S.	Both.	8	7	316.5		227.88	
6th st.	15th av S.	16th av S.	South.	8	1		55		16.50
6th st.	15th av S.	17th av S.	North.	8	6	220		158.40	
6th st.	19th av S.	20th av S.	North.	8	3	93		66.96	
6th st.	20th av S.	21st av S.	North.	8	2		80		24.00
6th st.	24th av S.	25th av S.	North.	8	1	34.2		24.62	
7th st.	13th av S.	14th av S.	North.	8	1	69		40.68	
7th st.	19th av S.	25th av S.	North.	8	20	967.9		696.89	
16th av S.	3rd st.	4th st.	West	8	2	171		123.12	
17th av S.	Cedar av.	5th st.	West.	8	1	72.5		52.20	
2½ st.	Cedar av.	19th av S.	North.	8	1	80		57.60	
2½ st.	20th av S.	21st av S.	Both.	8	8	4.9		352.08	
3rd st.	11th av S.	12th av S.	South.	8	2	146.5		105.48	
3rd st.	14th av S.	15th av S.	North.	8	1	74		53.28	
3rd st.	Cedar av.	15th av S.	Both.	8	5	329.9		237.53	
3rd st.	20th av S.	21st av S.	Both.	8	2		99		29.70
13th av S.	3rd st.	4th st.	East	8	3	171		123.12	
20th av S.	Wash. av.	2½ st.	West.	8	4		320		96.00
20th av S.	2½ st.	3rd st.	West.	8	1		99		29.70
20th av S.	6th st.	7th st.	East	8	2	64		46.08	
21st av S.	Wash. av.	2½ st.	West.	8	2		350		105.00
21st av S.	2½ st.	3rd st.	East	8	1	20		14.40	
21st av S.	3rd st.	4th st.	East	8	1	41		29.52	
21st av S.	4th st.	5th st.	West.	8	2		171		51.30
21st av S.	6th st.	7th st.	West.	8	5	350		252.00	
22nd av S.	Riverside av	7th st.	East	8	1		33		9.90
23rd av S.	7th st.	Riverside	West.	8	1	51.8		37.30	
Wash. av.	14th av S.	15th av S.	South.	18	1	21		33.18	
Wash. av.	Cedar av.	19th av S.	North.	8	1		27.5		8.25
Totals						6,366.3	2,905.3	6,006.81	\$871.59

TABLE NO. 39.—Continued.

STREET.	FROM—	TO—	Side.	Width in feet.	No. of descriptions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
7TH WARD—									
Bloom'gtn av	26th st.	27th st.	East.	8	10	607.3		\$437.28	
Bloom'gtn av	26th st.	27th st.	West.	8	1	298.0		214.56	
Bloom'gtn av	28th st.	29th st.	West.	8	2	96.0		69.12	
Bloom'gtn av	29th st.	Lake st.	West.	8	2	158.9		114.41	
Cedar av.	24th st.	25th st.	East.	8	1	214.7		154.58	
Cedar av.	26th st.	27th st.	West.	8	2	114.6		60.00	
Cedar av.	27th st.	28th st.	West.	8	4	183.1		131.82	
Cedar av.	Lake st.	31st st.	East.	8	6	299.9		215.93	
Cedar av.	31st st.	32d st.	Both.	8	26	1,177.9		848.09	
Cedar av.	34th st.	35th st.	Both.	8	12	537.3		386.85	
Cedar av.	35th st.	37th st.	East.	8	26	1,134.9		817.12	
Chicago av.	24th st.	Lake st.	East.	6	37	936.4		505.66	
11th av S.	24th st.	25th st.	Both.	6	25	1,020.3		550.96	
11th av S.	25th st.	25th st.	East.	6	6	269.3		145.42	
14th av S.	25th st.	27th st.	East.	6	14	563.7		304.40	
14th av S.	Lake st.	31st st.	East.	6	7	314		169.56	
14th av S.	Lake st.	31st st.	Both.	6	23		911		297.98
14th av S.	31st st.	35d st.	East.	6	41		1,234		308.52
15th av S.	25th st.	26th st.	East.	6	3	159		85.86	
Hiawatha av.	24th st.	26th st.	West.	6	21	1,343.4		725.43	
Lake st.	10th av S.	14th av S.	North.	8	26		1,127.2		338.14
9th av S.	24th st.	26th st.	Both.	6	48	2,408.7		1,300.69	
9th av S.	26th st.	27th st.	West.	6	8	604.5		326.43	
9th av S.	37th st.	38th st.	East.	6	15		612.3		153.09
9th av S.	39th st.	40th st.	East.	6	14		613		153.26
16th av S.	24th st.	25th st.	West.	6	3	132.3		71.44	
16th av S.	27th st.	28th st.	Both.	6	16	844.8		456.21	
16th av S.	Lake st.	31st st.	West.	6	8	437.6		236.30	
17th av S.	24th st.	25th st.	West.	8	3	120		86.41	
10th av S.	24th st.	25th st.	Both.	6	26	1,138.3		614.68	
25th st.	15th av S.	Bloom'n av.	South.	8	31	69		49.68	
26th st.	Cedar av.	Hiawa'a av.	Both.	8	22		2,016.1		604.83
32d st.	9th av S.	10th av S.	Both.	6	4	525.6		283.82	
32d st.	Cedar av.	19th av S.	Both.	6	9		1,027.8		256.95
34th st.	Chicago av.	10th av S.	Both.	6	6	773.2		417.53	
35th st.	Cedar av.	21st av S.	Both.	6	16		2,132.6		533.22
36th st.	9th av S.	12th av S.	North.	6	30		817.3		204.32
39th st.	Chicago av.	9th av S.	South.	6	2		267.3		66.83
Total.						16,482.7	10,759.5	\$9780.24	\$2847.14
8TH WARD.									
Blaisdell av.	22nd st.	24th st.	West.	6	12	603.1		\$325.65	
Blaisdell av.	25th st.	27th st.	East.	6	5	231		126.74	
Blaisdell av.	27th st.	Lake st.	Both.	6	33	1,635.9		883.38	
Bryant av.	Franklin av.	22nd st.	East.	6	6	296		159.84	
Bryant av.	24th st.	26th st.	East.	6	13	587.3		317.16	
Bryant av.	27th st.	28th st.	West.	6	2	60.5		32.67	
Bryant av.	33rd st.	34th st.	East.	6	12		494		\$123.50
Chicago av.	26th st.	28th st.	West.	6	4	178.4		96.34	
Chicago av.	Lake st.	31st st.	West.	6	1	40		21.60	
Clinton av.	24th st.	25th st.	Both.	6	2	710		383.40	
Clinton av.	25th st.	26th st.	East.	6	1	60.7		32.78	
Clinton av.	26th st.	27th st.	West.	6	8	401		216.54	
Clinton av.	31st st.	32nd st.	Both.	6	20	943.2		509.34	
Clinton av.	32nd st.	33rd st.	West.	6	1	45.2		24.41	
Clinton av.	33rd st.	34th st.	East.	6	13	601.6		324.89	
Colfax av.	25th st.	28th st.	East.	6	20	877.3		473.74	
Colfax av.	26th st.	27th st.	West.	6	6	244.4		131.98	
Colfax av.	29th st.	Lake st.	East.	6	10		548.7		137.18
Colfax av.	31st st.	32nd st.	West.	6	5	45.8		24.73	
Columbus av.	27th st.	28th st.	East.	6	12		598.4		149.60
Dupont av.	26th st.	27th st.	West.	6	4	163.2		88.13	
Dupont av.	27th st.	28th st.	East.	6	1		40		10.00
Dupont av.	31st st.	32nd st.	East.	6	1	53.4		28.84	
Emerson av.	26th st.	27th st.	West.	6	3	122.5		66.15	
Emerson av.	29th st.	Lake st.	East.	6	12		555.3		138.83
Fremont av.	Lake st.	31st st.	West.	6	10	512		276.48	
1st av S.	24th st.	25th st.	East.	6	6	185		106.39	
*1st av S.	26th st.	28th st.	West.	6					

*Assessed in tax 1893.

TABLE NO. 39.—Continued

STREET.	FROM—	To—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
8TH WARD—									
1st av S.	26th st.	Lake st.	East.	6	22	856.2		462.35	
4th av S.	24th st.	25th st.	Both.	6	5	601		324.54	
4th av S.	25th st.	26th st.	West.	6	2	97.8		52.82	
4th av S.	26th st.	27th st.	Both.	6	6	333.7		180.19	
4th av S.	28th st.	Lake st.	West.	6	17	746.9		403.33	
4th av S.	31st st.	33d st.	East.	6	5	241.3		130.32	
5th av S.	24th st.	25th st.	Both.	6	10	676.5		365.30	
5th av S.	25th st.	26th st.	East.	6	9	435.7		235.28	
5th av S.	26th st.	27th st.	West.	6	14	607.7		328.17	
5th av S.	31st st.	32d st.	East.	6	1	45		24.30	
Garfield av.	24th st.	25th st.	Both.	6	15	598		322.92	
Garfield av.	28th st.	29th st.	Both.	6	19	833.8		450.25	
Garfield av.	31st st.	32d st.	East.	6	13	605		326.70	
Girard av.	Franklin av.	22d st.	Both.	6	7	301		162.54	
*Girard av.	24th st.	25th st.	West.	6	1				
Girard av.	27th st.	28th st.	West.	6	2	114.3		61.72	
Girard av.	29th st.	Lake st.	Both.	6	25		1,111.4		277.86
Girard av.	Lake st.	31st st.	West.	6	2	98		52.92	
Grand av.	Franklin av.	22d st.	Both.	6	3	120		64.80	
Grand av.	22d st.	24th st.	East.	6	5	224		120.96	
Grand av.	26th st.	H & D Ry.	Both.	6	67	2,728.7		1,473.49	
Grand av.	Lake st.	31st st.	East.	6	9	351.6		189.86	
Harriet av.	22d st.	24th st.	East.	6	2	93.6		50.54	
Harriet av.	24th st.	25th st.	West.	6	9	339.4		183.28	
Harriet av.	27th st.	28th st.	East.	6	8	350.3		189.16	
Harriet av.	29th st.	Lake st.	West.	6	2	80		43.20	
Harriet av.	32d st.	34th st.	West.	6	25	1,088.8		587.95	
Hennepin av.	Lake st.	31st st.	West.	6	1	46		24.84	
Hennepin av.	32d st.	34th st.	East.	6	27		1,154.2		288.56
Humboldt av.	24th st.	25th st.	East.	6	3	136.9		73.93	
Humboldt av.	Lake st.	34th st.	West.	6	48		2,141.9		535.49
Irving av.	22d st.	24th st.	West.	8	1		88		26.40
Lake st.	Columbus av.	Chicago av.	North.	6	1	66		35.64	
Lake st.	3d av S.	Portland av.	North.	6-8	7	423.8		275.30	
Lake st.	2d av S.	3d av S.	South.	6	1	136.4		73.66	
Lake st.	Stevens av.	2d av S.	North.	8	3	140		100.80	
Lake st.	Nicollet av.	1st av S.	North.	6	1	44		23.76	
Lake st.	Nicollet av.	Pleasant av.	North.	6	16	755.3		467.86	
Lake st.	Blaisdell av.	Pillsb'ry av.	South.	6	2	175		94.50	
Lake st.	Grand av.	Harriet av.	South.	6	3	269.2		145.37	
Lake st.	Lyndale av.	Aldrich av.	Both.	6	3	216.5		116.91	
Lake st.	Aldrich av.	Hen'epin av.	South.	6	16	1,915.8		1,034.53	
Lake st.	Girard av.	Hen'epin av.	North.	6	1	136.1		73.49	
Lyndale av.	24th st.	25th st.	West.	8	1	45.2		32.54	
Lyndale av.	26th st.	27th st.	West.	8	9	420.1		302.47	
Lyndale av.	27th st.	Lake st.	East.	8	39	1,654		1,190.88	
Lyndale av.	Lake st.	32d st.	East.	6	16	756.6		408.56	
Lyndale av.	Lake st.	33d st.	West.	6	29	1,365.6		737.43	
Lyndale av.	33d st.	34th st.	East.	6	1	54.7		29.54	
Nicollet av.	24th st.	26th st.	East.	6	8	399.3		215.62	
Nicollet av.	26th st.	27th st.	Both.	6	6	352.8		190.52	
Nicollet av.	29th st.	Lake st.	West.	6	12	420		226.80	
Nicollet av.	31st st.	32d st.	West.	6	3	144		77.76	
Oakland av.	24th st.	26th st.	West.	6	8	429.8		232.10	
Oakland av.	28th st.	Lake st.	East.	6	22	1,132.4		611.49	
Oakland av.	H & D Ry.	Lake st.	West.	6	12	617.9		333.66	
Oakland av.	32nd st.	33rd st.	West.	6	14	614.7		331.94	
Park av.	32nd st.	33rd st.	West.	6	13	576.5		311.31	
Pillsbury av.	26th st.	27th st.	Both.	6	5	185.8		106.75	
Pillsbury av.	29½ st.	Lake st.	West.	6	2	90		48.60	
Pleasant av.	26th st.	Lake st.	Both.	6	43	1,192.4		643.90	
Pleasant av.	Lake st.	31st st.	West.	6	5	244		131.76	
Pleasant av.	31st st.	33rd st.	Both.	6	19	902.6		487.60	
Portland av.	27th st.	28th st.	East.	8	4	210.8		151.78	
Portland av.	29th st.	31st st.	East.	8	2	383.8		276.34	
Stevens av.	24th st.	25th st.	West.	6	6	306.5		165.51	
Stevens av.	26th st.	27th st.	East.	6	2	106		57.24	
Stevens av.	Lake st.	32nd st.	Both.	6	5	267.2		144.29	
Stevens av.	32nd st.	33rd st.	East.	6	13	573.4		309.64	
2nd av S.	25th st.	27th st.	Both.	6	15	871		470.24	

†N. G. See re-assessment.

TABLE NO. 39.—Continued.

STREET.	FROM—	TO—	Side.	Width in feet.	No. of descriptions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
8TH WARD—									
2nd av S.....	27th st	29th st.....	Both..	6	15	755.4	.....	407.92	.....
2nd av S.....	29th st	Lake st.....	West..	6	1	130.6	.....	70.52	.....
2nd av S.....	32nd st	33rd st.....	Both..	6	3	138	.....	74.52	.....
2nd av S.....	33rd st	34th st.....	East..	6	1	45	.....	24.30	.....
3rd av S.....	25th st	26th st.....	Both..	6	3	147.7	.....	79.76	.....
3rd av S.....	26th st	27th st.....	West..	6	5	185.8	.....	100.33	.....
3rd av S.....	28th st	29th st.....	Both..	6	8	333	.....	182.52	.....
3rd av S.....	Lake st.....	32nd st.....	West..	6	14	616.3	.....	332.81	.....
3rd av S.....	31st st	33rd st.....	East..	6	5	296.1	.....	159.90	.....
22nd st	Aldrich av..	Lyndale av..	South.	6	2	253.1	.....	139.37	.....
24th st	Columbus av.	Chicago av..	South.	8	1	274.9	.....	197.93	.....
24th st	Oakland av..	Portland av..	South.	6	1	45.5	.....	24.57	.....
24th st	5th av S.....	Portland av..	South.	6	2	274.5	.....	148.23	.....
24th st	Clinton av..	4th av S.....	South.	6	2	281	.....	151.74	.....
24th st	Pleasant av..	Pillsbury av.	South.	6	9	370	.....	199.80	.....
24th st	Harriet av..	Lyndale av..	South.	6	4	526.7	.....	284.41	.....
25th st	Columbus av.	Chicago av..	North.	6	5	159.5	.....	85.59	.....
25th st	5th av S.....	Oakland av..	South.	6	5	385.2	.....	208.01	.....
25th st	Clinton av..	4th av S.....	South.	6	1	136.2	.....	73.55	.....
25th st	Stevens av..	Clinton av..	North.	6	5	882.5	.....	476.55	.....
25th st	1st av S.....	Stevens av..	South.	6	1	129	.....	69.66	.....
25th st	Dupont av..	Henn. av.....	North.	6	4	477.6	.....	257.90	.....
25th st	Girard av..	Henn. av.....	North.	6	2	311.2	.....	168.05	.....
26th st	Portland av..	Chicago av..	South.	6	8	914.5	.....	493.85	.....
26th st	Clinton av..	4th av S.....	South.	6	2	138	.....	74.52	.....
26th st	3rd av S.....	Clinton av..	Both..	6	2	261.4	.....	141.16	.....
26th st	Blaisdell av.	Harriet av..	South.	6	13	748.9	.....	404.41	.....
26th st	Garfield av.	Harriet av..	North.	6	2	286.2	.....	154.55	.....
26th st	Garfield av..	Lyndale av..	South.	6	1	142.6	.....	77.00	.....
26th st	Lyndale av..	Aldrich av..	Both..	6	3	255	.....	137.70	.....
26th st	Bryant av..	Collfax av.....	North.	6	1	43	.....	23.22	.....
27th st	Portland av..	Oakland av..	South.	6	1	130.4	.....	70.42	.....
27th st	4th av S.....	5th av S.....	South.	6	1	67.5	.....	36.45	.....
27th st	1st av S.....	3rd av S.....	Both..	6	13	884.9	.....	477.86	.....
27th st	Nicollet av..	1st av S.....	South.	6	5	252.5	.....	136.35	.....
27th st	Nicollet av..	Blaisdell av.	Both..	6	3	411.2	.....	222.05	.....
27th st	Garfield av.	Harriet av..	North.	6	1	131.1	.....	70.79	.....
27th st	Lyndale av..	Dupont av..	Both..	6	15	2,021.5	.....	1,091.60	.....
27th st	Emerson av..	Fremont av..	Both..	6	4	548.6	.....	296.24	.....
27th st	Fremont av..	Girard av..	North.	6	2	274.2	.....	148.07	.....
28th st	Park av.....	Chicago av..	North.	6	3	535	.....	288.90	.....
28th st	1st av S.....	3rd av S.....	Both..	6	3	395.6	.....	213.62	.....
28th st	Nicollet av..	Blaisdell av.	South.	6	1	197.2	.....	106.49	.....
28th st	Blaisdell av.	Lyndale av..	Both..	6	34	2,737.5	.....	1,478.25	.....
28th st	Fremont av..	Hennepin..	South.	8	3	405.5	.....	121.65	.....
24th st	Fremont av..	Girard av..	South.	8	1	131	.....	39.30	.....
29th st	Nicollet av..	Blaisdell av.	South.	6	2	156	.....	84.24	.....
31st st	Stevens av..	Clinton av..	Both..	6	6	809.6	.....	437.18	.....
*31st st	Nicollet av..	1st av S.....	North.	6	.....	.....	.....	.....	.....
31st st	Pleasant av..	Grand av.....	North.	6	1	.....	129.6	.....	32.46
31st st	Humboldt av.	Irving av.....	North.	6	1	.....	137.1	.....	34.28
32nd st	2nd av S.....	3rd av S.....	North.	6	1	131.2	.....	70.85	.....
32nd st	3rd av S.....	Clinton av..	Both..	6	5	405.7	.....	219.09	.....
32nd st	Grand av.....	Pleasant av..	North.	6	2	255.7	.....	138.08	.....
32nd st	4th av S.....	Portland av..	South.	6	4	527.5	.....	284.85	.....
32nd st	Harriet av..	Lyndale av..	South.	6	4	541.3	.....	292.31	.....
33rd st	Portland av..	Chicago av..	South.	6	7	887.2	.....	479.09	.....
33rd st	Clinton av..	Portland av..	North.	6	8	642	.....	346.68	.....
33rd st	Harriet av..	Grand av.....	North.	6	1	131.5	.....	71.01	.....
34th st	Aldrich av..	Lyndale av..	North.	6	2	.....	260.2	.....	65.05
34th st	Bryant av.....	Aldrich av..	North.	8	2	.....	274.7	.....	82.41
Totals						62,971.7	8,970.0	34,627.66	2,062.51

*All built.

TABLE NO. 39.—Continued.

STREET.	FROM—	TO—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
9TH WARD—									
Adams st....	17th av NE....	18th av NE.	East..	6	3	129.5		69.93	
Broadway st..	Madison st....	Jackson st.	South..	6	4	506.5		273.51	
Buchanan st..	19th av NE....	22d av NE.	Both..	6	24	1,220.2		653.90	
Central av....	Spring st....	Summer st..	East..	6	1	35.3		21.22	
Central av....	19th av NE....	22d av NE.	West..	6	9	451.9		244.03	
Central av....	22d av NE....	23d av NE.	East..	15	1	97.5		127.78	
Central av....	24th av NE....	25th av NE.	West..	15	4	177		231.87	
Division st..	Taylor st....	Polk st....	North..	6	1	140.8		76.03	
8th av NE....	5th st....	6th st....	North..	6	7	352		190.08	
1st av NE....	6th st....	Central av..	Both..	6	3	500.3		270.16	
5th st....	7th av NE....	8th av NE.	East..	6	1	74		39.96	
5th st....	13th av NE....	17th av NE.	East..	6	26	1,022.5		552.15	
Harrison st..	Division st..	Spring st..	East..	6	12	484.6		261.66	
Jackson st..	3d av NE....	Broad'v st.	Both..	6	47	2,134.2		1,152.47	
Jefferson st..	Broadway st.	18th av NE.	West..	6	6	424.6		229.28	
Jefferson st..	15th av NE....	17th av NE.	East..	6	2	88.6		47.85	
Madison st..	Summer st....	Spring st..	East..	6	2	62.5		33.75	
Madison st..	22d av NE....	24th av NE.	East..	6	14	686		370.44	
Monroe st....	3d av NE....	Broadw'y st	East..	6	8	343		185.22	
19th av NE....	5th st....	Jefferson st.	South..	6	32	1,047		565.38	
19th av NE....	Polk st....	Taylor st....	South..	6	6	298		160.92	
Quincy st....	18th av NE....	20th av NE.	Both..	6	24	1,151		621.52	
Quincy st....	23d av NE....	26th av NE.	Both..	6	54	2,590.4		1,398.82	
Spring st....	Harrison st..	Lincoln st..	Both..	6	21	2,479		1,338.65	
Spring st....	Madison st..	Monroe st....	Both..	6	2	270		145.80	
Spring st....	Monroe st....	Quincy st....	North..	6	2	264		142.56	
Summer st....	Quincy st....	Van Bu'n st	Both..	6	4	540		291.60	
Summer st....	Tyler st....	Polk st....	Norch..	6	1	140.5		75.87	
Summer st....	Filmore st....	Buc'anan st.	Both..	6	9	1,072.1		578.92	
6th st....	Broadway st.	17th av NE.	West..	6	13	1,235.5		667.17	
6th st....	15th av NE....	17th av NE.	East..	6	5	209.5		113.13	
6th st....	18th av NE....	22d av NE.	Both..	6	37	2,247.7		1,213.70	
6th st....	22d av NE....	25th av NE.	West..	6	20	1,010		545.40	
7th av NE....	5th st....	Wash'ton st	Both..	6	4	593		320.22	
13th av NE....	6th st....	Wash'ton st	South..	6	1	154.5		83.43	
20th av NE....	Jackson st....	Quincy st....	South..	6	5	376		203.04	
20th av NE....	Taylor st....	Filmore st..	South..	6	2	337.5		182.25	
22d av NE....	Central av....	Polk st....	North..	6	1	43.8		23.65	
22d av NE....	5th st....	6th st....	South..	6	4	201.5		108.81	
22d av NE....	Madison st..	Monroe st....	North..	6	3	382.3		206.44	
23d av NE....	Lincoln st..	Johnson st..	South..	6	2	276.4		149.36	
25th av NE....	Monroe st....	Jackson st..	North..	6	9	555.4		191.92	
25th av NE....	Jackson st....	Central av..	Both..	6	8	704.9		380.65	
25th av NE....	5th st....	Wash'ton st	South..	6	4	505.5		272.97	
26th av NE....	Taylor st....	Filmore st..	North..	6	4	165.5		89.37	
27th av NE....	Central av....	Taylor st....	Both..	6	15	1,493		806.22	
Van Buren st.	Central av....	Summer st..	East..	6	16	640.8		346.03	
Van Buren st.	Summer st....	Bro'dway st	Both..	6	29	1,224		660.96	
Washington st	Spring st....	Bro'dway st	West..	6	5	371.9		200.83	
Washington st	Broadway st..	17th av NE.	Both..	6	36	370		199.80	
W'shingt'n av	18th av NE....	19th av NE.	Both..	6	10	393		320.22	
Totals....						32,278.7		17,641.85	
10TH WARD.									
Colfax av....	41st av N....	Cr'st'l L R'd	Both..	6	44		2,703.6		\$675.89
4th st....	29th av N....	32nd av N.	Both..	6	38		2,296		574.00
*4th st....	33rd av N....	34th av N.	Both..	6					
41st av N....	Wash. av....	Lyndale av..	Both..	6	8		723.9		180.97
42nd av N....	Lyndale av..	Fremont av..	Both..	6	20		3,303.5		825.87
*47th av N....	Lyndale av..	Dupont av..	Both..	6	10		1,479.6		369.90
Humbolt av..	30th av N....	38th av N....	Both..	6	168		8,680.5		2,170.13
6th st....	32nd av N....	33rd av N....	Both..	6	29		1,187.8		296.95
26th av N....	Wash. av....	3rd st....	North..	6	3	346.9		\$187.33	
27th av N....	Wash. av....	4th st....	Both..	6	12		1,163.3		290.82
30th av N....	Dupont av..	Humboldt av.	Both..	6	16		1,994.2		498.55
32nd av N....	3rd st....	Lyndale av..	South..	6	9		1,023		255.75
*32nd av N....	Penn av....	Humboldt av.	North..	6					
Wash. av N....	26th av....	31st av....	West..	6	34	1,828.7		987.49	
Wash. av N....	35th av....	42nd av....	West..	6	76	4,462.6		1,115.65	
Total....						2,175.6	29,018	1,174.82	7,254.48

*Annulled September 27, 1895. †Annulled September 27, 1895. North side.

‡Penn to Morgan built. Balance assessed tax 1893, Penn to Morgan, N. side, annulled September 27, 1895.

TABLE NO. 39.—Continued.

STREET.	FROM—	To—	Side.	Width in feet.	No. of descriptions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone.	Plank.
11TH WARD.									
8th st.....	11th av S.....	12th av S.....	East ..	8	5	270		\$194.40	
8th st.....	20th av S.....	21st av S.....	Both ..	8	17		693		\$207.90
8th st S.....	21st av S.....	22nd av S.....	South ..	8	7		235		70.50
8th st.....	23rd av S.....	24th av S.....	South ..	8	4		171.4		51.42
11th av S.....	7th st.....	14th st.....	West ..	8	4	333.9		240.41	
11th av S.....	17th st.....	18th st.....	West ..	8	2	100		72.00	
11th av S.....	19th st.....	Franklin av ..	West ..	8	1	157.7		113.54	
11th av S.....	22nd st.....	24th st.....	West ..	8	1	36.8		26.50	
18th st.....	10th av S.....	11th av S.....	North ..	6	1	156		84.20	
18th av S.....	Franklin av ..	22nd st.....	East ..	6	9		381.6		95.40
18th av S.....	22nd st.....	24th st.....	Both ..	6	18		750		187.50
14th av S.....	18th st.....	19th st.....	West ..	8	3	120		86.40	
14th av S.....	Franklin av ..	21st st.....	West ..	6	1	131.6		71.06	
14th av S.....	21st st.....	22nd st.....	East ..	6	1		75.3		18.83
15th av S.....	19th st.....	Franklin av ..	East ..	8	1	101.5		73.08	
15th av S.....	Franklin av ..	22nd st.....	East ..	6	2		284.2		71.06
15th av S.....	23rd st.....	24th st.....	East ..	6	3	103.8		56.05	
Franklin av ..	16th av S.....	17th av S.....	South ..	12	5	290.5		302.11	
Franklin av ..	Minnehaha ..	21st av S.....	South ..	12	1		163.9		67.20
Franklin av ..	22nd av S.....	23rd av S.....	South ..	8	7		326.1		97.83
Minnehaha ..	Franklin av ..	24th st.....	West ..	8	17		867.5		260.25
9th st.....	13th av S.....	14th av S.....	North ..	8	3	143.5		103.32	
9th st.....	22nd av S.....	23rd av S.....	North ..	8	1		110		33.00
9th st.....	23rd av S.....	24th av S.....	Both ..	8	4		171.4		51.42
19th st.....	10th av S.....	11th av S.....	South ..	6	3	265.5		143.37	
19th st.....	11th av S.....	13th av S.....	Both ..	6	7	584		315.36	
19th st.....	15th av S.....	16th av S.....	North ..	6	2	40		21.60	
7th st.....	17th av S.....	18th av S.....	South ..	8	1	55		39.60	
7th st.....	19th av S.....	20th av S.....	South ..	8	5		204		61.20
7½ st.....	22nd av S.....	23rd av S.....	North ..	6	8		350		87.50
16th av S.....	7th st.....	8th st.....	East ..	8	1	45		32.40	
16th av S.....	Franklin av ..	24th st.....	Both ..	6	17	971.7		524.74	
17th av S.....	7th st.....	8th st.....	East ..	8	1	32.9		23.69	
17th av S.....	8th st.....	18th st.....	West ..	6	1		114.2		28.55
17th av S.....	Franklin av ..	24th st.....	Both ..	6	35	1,635.5		883.19	
10th av S.....	19th st.....	Franklin av ..	East ..	6	5	294.2		158.87	
10th av S.....	21st st.....	22nd st.....	East ..	6	5	226		122.05	
12th av S.....	21st st.....	22nd st.....	West ..	4	1		136.5		24.57
12th av S.....	22nd st.....	24th st.....	Both ..	4	4		198.7		35.77
13th av S.....	8th st.....	9th st.....	West ..	8	2	69		43.20	
13th av S.....	Anderson Pl.	18th st.....	West ..	8	1	88.3		63.58	
13th av S.....	Franklin av ..	21st st.....	West ..	6	2	279.7		151.03	
13th av S.....	22nd st.....	24th st.....	West ..	6	3		374.7		93.69
21st st.....	10th av S.....	11th av S.....	South ..	6	3	98.6		53.24	
21st st.....	11th av S.....	12th av S.....	South ..	6	3		151.8		37.95
21st st.....	12th av S.....	13th av S.....	Both ..	6	11		553.9		140.98
21st st.....	13th av S.....	14th av S.....	South ..	6	5	290.4		156.82	
*21st st.....	14th av S.....	15th av S.....	North ..	6	.....			
22nd st.....	10th av S.....	12th av S.....	South ..	6	4	156		84.24	
22nd st.....	16th av S.....	18th av S.....	North ..	6	2		255.5		63.88
22nd st.....	20th av S.....	23rd av S.....	Both ..	8	21		570.6		171.18
22nd st.....	23rd av S.....	24th av S.....	South ..	8	4		282.4		84.72
23rd st.....	12th av S.....	13th av S.....	Both ..	6	5		250.6		62.65
*23rd st.....	14th av S.....	15th av S.....	Both ..	6	.....			
23rd st.....	8½ st.....	9th st.....	Both ..	8	6		381.4		114.42
23rd av S.....	22nd st.....	24th st.....	West ..	8	4		190.4		57.12
24th st.....	13th av S.....	14th av S.....	North ..	6	1	27		14.58	
24th st.....	15th av S.....	Bl'm'gt'n av ..	North ..	6	1	120		64.80	
24th st.....	23rd av S.....	24th av S.....	North ..	8	3		344		103.20
24th av S.....	8th st.....	Franklin av ..	Both ..	8	17		1,170.6		351.18
Totals						7,215.1	9,768.7	4,319.43	2,730.87

*All built.

TABLE NO. 39.—*Concluded.*

STREET.	FROM—	To—	Side.	Width in feet.	No. of descrip- tions.	LENGTH ASSESSED.		AMOUNT OF ASSESSMENT.	
						Artificial stone, feet.	Plank, feet.	Artificial stone,	Plank.
12TH WARD—									
Lake st.	22d av S.	23d av S.	South.	8	6	372.	.....	\$256.08	.....
Lake st.	23d av S.	Snelling av.	South.	8	15	.....	497.8	.....	\$149.34
Lake st.	23d av S.	Minne'a av.	North.	8	12	.....	821.3	.....	246.39
Lake st.	27th av S.	32d av S.	North.	8	12	.....	1,582.8	.....	474.84
23d av S.	25th st.	26th st.	East.	8	14	.....	597	.....	179.10
23d av S.	33d st.	35th st.	East.	8	19	.....	1,166.4	.....	349.92
24th st.	21st av S.	23d av S.	South.	8	10	.....	523.8	.....	157.14
24th st.	26th av S.	27th av S.	South.	8	6	.....	324	.....	97.20
25th st.	24th av S.	26th av S.	North.	8	4	.....	387.4	.....	116.22
25th st.	27th av S.	W. to alley.	North.	8	5	.....	166	.....	49.80
25th st.	26th av S.	E. to alley.	South.	8	5	.....	166	.....	49.80
25th st.	27th av S.	28th av S.	North.	8	7	.....	342	.....	102.60
25th st.	28th av S.	29th av S.	South.	8	6	.....	342	.....	102.60
25th st.	29th av S.	31st av S.	Both.	8	28	.....	1,240	.....	372.00
26th st.	23d av S.	24th av S.	North.	8	2	.....	342.8	.....	102.84
26th st.	28th av S.	31st av S.	Both.	8	31	.....	1,861.6	.....	558.48
26th av S.	26th st.	29th st.	East.	8	34	.....	1,059.9	.....	497.97
27th av S.	27th st.	28th st.	West.	8	11	.....	542	.....	162.60
27th av S.	27th st.	29th st.	East.	8	23	.....	1,156.1	.....	346.83
32d st.	23d av S.	Minne'a av.	South.	8	8	.....	1,620.6	.....	486.18
Totals.						372	15,339.5	\$256.08	\$4601.85
13TH WARD.									
Blaisdell av.	34th st.	35th st.	East.	8	13	.....	571.5	.....	\$171.45
Bryant av.	37th st.	38th st.	East.	6	1	.....	219.3	.....	54.83
Columbus av.	35th st.	36th st.	West.	6	13	.....	599.3	.....	149.82
1st av S.	34th st.	35th st.	Both.	6	6	.....	1,084.5	.....	271.14
46th st.	Bryant av.	Fremont av.	South.	8	8	.....	1,127.2	.....	338.16
Garfield av.	34th st.	35th st.	West.	6	14	.....	603.9	.....	150.98
Nicollet av.	34th st.	35th st.	West.	8	1	.....	40	.....	12.00
Nicollet av.	37th st.	38th st.	West.	8	15	.....	611.4	.....	183.43
Nicollet av.	38th st.	39th st.	East.	8	15	.....	616	.....	184.80
Oakland av.	34th st.	35th st.	West.	6	13	.....	602.2	.....	150.56
35th st.	Chicago av.	Park av.	North.	6	4	.....	377.6	.....	94.42
35th st.	Nicollet av.	Blaisdell av.	North.	6	5	.....	367	.....	91.75
W 37th st.	Lyndale av.	Dupont av.	North.	6	9	.....	1,078.3	.....	269.61
Total.							7,898.2		2,122.95

TABLE NO. 39.

SUMMARY OF SIDEWALKS ORDERED FOR 1896.

Wards.	Artificial stone.		Plank.		Totals.	
	Feet.	Assess- ment.	Feet.	Assess- ment.	Feet.	Assess- ment.
First.	44,435.9	\$24,016.88	475	\$118.75	44,910.9	\$24,135.63
Second.	5,280.1	2,851.57	.....	.....	5,280.1	2,851.57
Third.	13,808.4	8,123.58	21,790.9	5,447.98	35,599.3	13,571.56
Fourth.	16,159.2	8,966.19	980.8	245.20	17,140	9,211.39
Fifth.	9,630.1	5,917.20	.....	.....	9,630.1	5,917.20
Sixth.	6,366.3	6,006.81	2,905.3	871.59	9,271.6	6,878.40
Seventh.	16,482.7	9,780.24	10,759.5	2,847.14	27,242.2	12,627.38
Eighth.	62,971.7	34,627.66	8,070	2,062.51	71,041.7	36,690.17
Ninth.	32,278.7	17,641.85	.....	.....	32,278.7	17,641.85
Tenth.	2,175.6	1,174.82	29,018	7,254.48	31,193.6	8,429.30
Eleventh.	7,215.1	4,319.43	9,768.7	2,730.87	16,983.8	7,050.30
Twelfth.	372	256.08	15,339.5	4,601.85	15,711.5	4,857.93
Thirteenth. ....	.....	.....	7,898.2	2,122.95	7,898.2	2,122.95
Totals.	217,175.8	\$123,682.31	107,005.9	\$28,303.32	324,181.7	\$151,985.63
Total miles.	41.132	20.266	61.398

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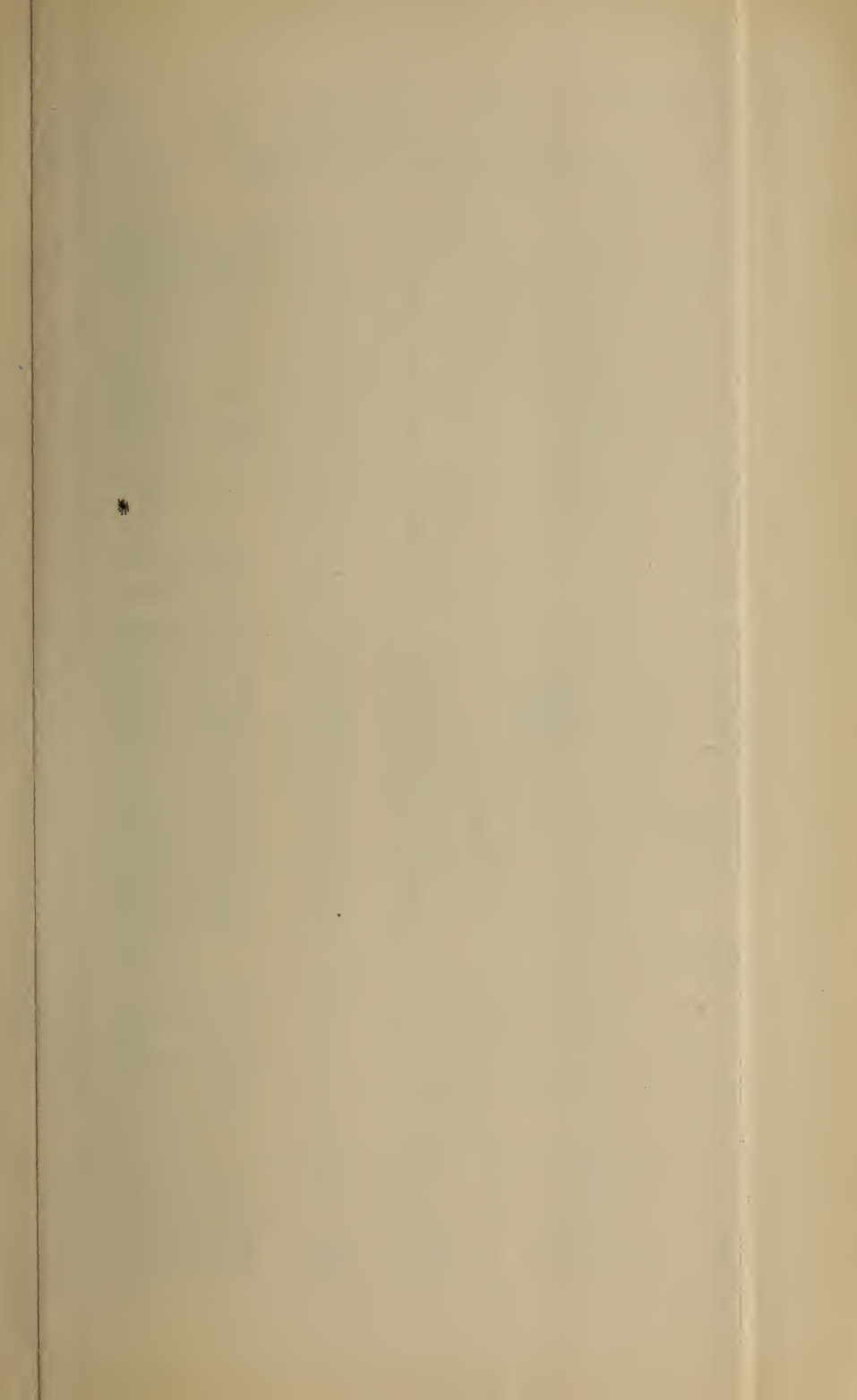


TABLE NO. 40.

NEW BRIDGES COMPLETED AND UNDER CONSTRUCTION. BRIDGE REPAIRS AND MAINTENANCE.

BRIDGES COMPLETED IN 1895.

Cost to the City of Minneapolis.

Cedar Lake bridge, over Osseo branch G. N. Ry., built by G. N. Ry. Co.....	.....
Fourth av. S. viaduct over 4th av. S. at 29th st. ....	.....
Culvert University av. and 25th av. SE., over Bridal Veil Creek.....	\$461.72

BRIDGES UNDER CONSTRUCTION.

Seventh st. N. bridge, over M. & St. L. and G. N. Ry. (substructure).....	8,024.64
Dean boulevard bridge, built by C. M. & St. P. Ry. Co., to be paid by park board .....	.....

BRIDGE REPAIRS AND MAINTENANCE.

First st. N. bridge over M. & St. L. and G. N. Rys.....	4.05
Fourth st. N. bridge over M. & St. L. and G. N. Rys.....	154.12
Fifth st. N. bridge over M. & St. L. and G. N. Rys.....	2.62
Holden st. bridge over M. & St. L. and G. N. Rys.....	78.00
Lyndale av. bridge over M. & St. L. and G. N. Rys.....	152.29
Western av. bridge over M. & St. L. and G. N. Rys.....	102.18
Superior av. bridge over M. & St. L. and G. N. Rys.....	67.92
Main st. NE. bridge over G. N. Ry. (retaining wall, sidewalks, etc.).....	2,559.36
Second st. NE. bridge over G. N. Ry.....	4.32
University av. N. E. bridge over G. N. Ry.....	38.55
Fourth st. NE. bridge over G. N. Ry.....	69.81
Fifth st. NE. bridge over G. N. Ry.....	32.00
Central av. and 9th st. SE. bridge over G. N. Ry.....	1,012.43
West Lake st. bridge over M. & St. L. and C. M. & St. P. Rys.....	229.43
University and 29th av. NE. bridge over N. P. and G. N. and M. St. P. & S. St. Marie Rys.....	84.61
Fourth av. N. bridge over N. P. Ry.....	10.06
Twentieth av. N. bridge over Mississippi river.....	260.23
Plymouth av. bridge over Mississippi river (new roadway).....	4,037.99
Steel arch bridge over the Mississippi river.....	177.35
Tenth av. S. bridge over the Mississippi river.....	576.24
Washington av. S. bridge over the Mississippi river.....	20.84
Franklin av. bridge over the Mississippi river.....	21.27
Lake st. bridge over the Mississippi river.....	55.28
Hennepin Island bridge over the Mississippi river (east channel).....	565.76
First st. N. bridge over Bassett's creek.....	33.05
Washington av. N. bridge over Bassett's creek.....	502.44
Fourth st. N. bridge over Bassett's creek (wing walls).....	138.56
Sixth av. N. bridge over Bassett's creek, near Upton av.....	220.61
Western av. bridge over Bassett's creek.....	66.92
Bryant av. bridge over Bassett's creek.....	9.75
Dupont av. bridge over Bassett's creek.....	763.14
Portland av. bridge over Minnehaha creek.....	108.75
Chicago av. bridge over Minnehaha creek.....	48.05
Lyndale av. bridge over Minnehaha creek.....	316.88
Xerxes av. bridge over Minnehaha creek.....	.18
Forty-fourth av. N. bridge over Shingle creek (replanking).....	53.01
Lyndale av. N. bridge over Shingle creek.....	133.10
Bridge tools and general repairs.....	1,082.11
Soo st. bridge over Soo st.....	3.50

Total..... \$22,283.15

TABLE NO. 43.
STREETS OPENED AND VACATED IN 1895.

STREET.	FROM —	TO —	Opened or vacated.	Plat.	Proceedings confirmed 1895.	Width opened, feet.	Width of street in feet.	Length opened, feet.	Length vacated, feet.	Square feet opened.
Beard av.....	38th st.	40th st.	V	8-16	March 29th.	.....	.....	.....	1,185	.....
Broadway st.....	Polk st.	Fillmore st.	V	8-16	March 29th.	.....	.....	.....	500	.....
Chowen av.....	38th st.	40th st.	V	8-16	March 29th.	.....	.....	.....	1,185	.....
Drew av.....	38th st.	40th st.	V	8-16	March 29th.	.....	.....	.....	1,185	.....
Dupont av.....	22nd st.	Hennepin av.	O	8-15	June 28th.	.....	60	65	.....	1,950
Dupont av.....	46th av N.	51st av N.	O	8-16	April 5th.	.....	66	2,630	.....	173,580
Emerson av.....	Across H & D.	Right of Way.	O	8-16	Dec. 13th.	.....	60	100	.....	6,000
Ewing av.....	38th st.	40th st.	V	8-20	March 29th.	.....	.....	.....	1,185	.....
France av.....	38th st.	40th st.	V	8-16	March 29th.	.....	.....	.....	1,185	.....
40th st.....	Beard av.	France av.	V	8-16	March 29th.	.....	.....	.....	1,320	.....
Mt. Curve av.....	Fremont av.	Humboldt av.	O & V	8-15	April 5th.	Irregular.	60	.....	935	2,000
Road—County.	50th st.	5½ st.	V	8-19	July 7th.	.....	.....	820	.....	49,200
2nd av N.....	Aldrich av.	Humboldt av.	O	8-15	Nov. 29th.	.....	66	2,280	.....	150,480
17th av N.....	Girard av.	Penn av.	O	8-15	Feb. 28th.	.....	66	350	.....	21,000
W 28th st.....	Hennepin av.	Humboldt av.	O	8-17	Sept. 10th.	.....	60	.....	1,320	.....
W 38th st.....	Beard av.	France av.	V	8-16	March 29th.	.....	.....	.....	1,320	.....
W 30th st.....	Beard av.	France av.	V	8-16	March 29th.	.....	.....	.....	1,320	.....
Totals.....								6,245	11,410	404,210

9,500 ACRES.

TABLE NO. 44.

ALLEYS OPENED OR VACATED IN 1895.

[illegible]

TABLE NO. 45.

LEVELS RUN, GRADES SET, SURVEYS MADE—PERMITS AND CERTIFICATES
ISSUED DURING 1895.

STREET.	FROM.—	TO—	LENGTH IN FEET.
Alley.....	Block 2.....	Sibley's addition.....	400
Alley.....	Block 38.....	Gale's sub-division.....	331
Alley.....	Block 44.....	Kenwood.....	496
Buchanan st.....	27th av NE.....	29th av NE.....	1,320
County Road.....	37th av NE.....	45th av NE.....	5,426
California st.....	37th av NE.....	45th av NE.....	5,276
Cooper st.....	2nd st.....	N line Wash av add.....	1,081
Emerson av.....	27th st.....	Hennepin av.....	1,817
Edgmoor Place.....	38th av NE.....	40th av NE.....	1,986
4th st NE.....	40th av.....	45th av.....	3,302
5th st NE.....	37th av.....	45th av.....	5,277
40th av NE.....	Main st.....	River.....	3,257
41st av NE.....	Main st.....	River.....	3,103
42nd av NE.....	Main st.....	River.....	2,877
43rd av NE.....	Main st.....	River.....	2,950
44th av NE.....	Main st.....	River.....	3,034
45th av NE.....	Main st.....	River.....	2,750
Grand st.....	37th av NE.....	45th av NE.....	5,297
Lake st.....	9th av S.....	15th av S.....	1,970
Lake st.....	Minnehaha av.....	River.....	7,634
Lincoln st.....	25th av NE.....	29th av NE.....	2,640
Lookout Place.....	5th st NE.....	40th av NE.....	1,285
Mill st.....	2nd st.....	N line Wash av add.....	984
Mill st.....	5th st NE.....	40th av NE.....	1,262
Madison Place.....	37th av NE.....	172 ft. N of 38th av N E.....	502
9th av S.....	29th st.....	Lake st.....	600
Pierce st.....	28th av NE.....	29th av NE.....	654
"P" st.....	Broadway st.....	18th av NE.....	2,635
"Q" st.....	Broadway st.....	18th av NE.....	2,635
"R" st.....	Broadway st.....	18th av NE.....	2,635
Randolph st.....	37th av NE.....	45th av NE.....	5,271
Reservoir Boulevard.....	37th av NE.....	45th av NE.....	6,543
"boul. as fin. loc't'd	37th av NE.....	45th av NE.....	6,332
River Bank.....	4th st S.....	Cedar av.....	4,707
"S" st.....	Broadway st.....	18th av NE.....	2,635
Superior av.....	Penn av.....	Xerxes av.....	2,625
Summit av.....	Lookout Place.....	40th av NE.....	1,016
2nd st NE.....	37th av.....	45th av.....	5,279
"T" st.....	Broadway st.....	18th av NE.....	2,634
2½ st NE.....	37th av NE.....	Edgmoor Place.....	1,261
2½ st NE.....	40th av NE.....	45th av NE.....	3,307
3rd st NE.....	37th av NE.....	Edgmoor Place.....	1,021
3rd st NE.....	40th av.....	45th av.....	3,307
13th av NE.....	Stinson Boulevard.....	"W" st.....	5,011
W 24th st.....	Sheridan av.....	Kenwood Boulevard.....	830
28th av NE.....	Filmore st.....	Johnson st.....	1,320
37th av NE.....	Main st.....	River.....	3,670
38th av NE.....	Main st.....	River.....	3,618
39th av NE.....	2nd st.....	River.....	3,761
"U" st.....	Broadway st.....	18th av NE.....	3,636
University av NE.....	37th av.....	Edgmoor Place.....	921
University av NE.....	40th av.....	45th av.....	3,307
"V" st.....	Broadway st.....	18th av NE.....	3,635
"W" st.....	Broadway st.....	18th av NE.....	3,635
Total number of feet.....			154,731
Total number of miles.....			29.305

Total number of grade orders set.....	1,597
Total number of surveys made.....	210
Total number of cross-sections made.....	5
Total number of house number certificates.....	1,605
Total number of electric permits.....	15
Total number of curb and paving removal permits.....	11
Total number of conduit permits.....	6

TABLE NO. 46.—*Concluded.*

WARD.	FRONTAGE.					LENGTH SPRINKLED.		
	Assessed.		Exempt.		Total.	Street in- tersections. Feet.	Total.	
	Paved Sts. Feet.	Dirt street. Feet.	Total. Feet.	Paved Sts. Feet.			Feet.	Miles. 100ths.
First.....	22,262	87,104	109,366	.....	949	7,589	62,747	11.88
Second.....	44,161	117,053	161,214	6,130	7,407	13,553	100,929	19.12
Third.....	66,767	108,258	235,025	6,716	7,460	15,921	140,532	26.61
Fourth.....	88,511	143,663	232,114	4,471	7,149	15,063	136,930	25.93
Fifth.....	78,690	166,124	244,814	6,364	7,820	16,461	145,910	27.63
Sixth.....	16,828	84,625	101,453	755	5,113	8,466	62,127	11.77
Seventh.....	.....	134,721	134,721	.....	6,180	9,574	90,025	17.05
Eighth.....	4,752	354,630	359,382	.....	5,616	12,065	195,104	36.95
Ninth.....	24,874	133,882	138,756	4,745	6,521	9,766	84,777	16.06
Tenth.....	4,419	32,374	36,793	.....	2,818	2,395	22,201	4.20
Eleventh.....	5,009	157,462	162,471	1,179	5,768	11,090	95,799	18.14
Twelfth.....	.....	29,324	29,324	.....	2,083	2,569	18,273	3.46
Thirteenth.....	.....	40,038	40,038	.....	1,637	3,255	24,093	4.56
Totals.....	367,435	1,662,174	2,029,609	30,260	66,521	130,077	1,193,276	225.98
	6,387	6,133	12,520	*Park avenue paved assessed at ten cents. [Fifth ward.]				
	4,775	6,843	11,613	*Portland avenue assessed at seven cents. [Eighth ward.]				

TABLE NO. 47.

STREET SPRINKLING ORDERED FOR 1896.

ASSESSMENTS.					FRONTAGE.							
WARDS.	Pr. fr'nt ft.		Paved streets.	Dirt streets.	Total paved and dirt.	Assessed.		Exempt.		Totals.		
	Paved Cts.	Dirt Cts.				Paved streets, feet.	Dirt streets, feet.	Total paved and dirt streets, ft.	Paved streets, feet.	Dirt streets, feet.	Paved streets, feet.	Dirt streets, feet.
First.....	5	4.5	\$1,312.81	\$6,160.40	\$7,473.30	26,257	122,056	148,313	.....	1,524	123,580	140,837
Second.....	4.5	4.5	5,381.65	1,970.51	7,352.16	43,792	119,597	163,389	.....	7,407	127,004	176,936
Third.....	4	3	2,667.58	5,484.62	8,152.20	68,932	182,831	251,763	6,716	7,400	190,291	263,693
Fourth.....	7	5	6,584.79	6,983.75	13,568.54	93,310	139,675	232,985	7,149	7,149	146,824	244,605
Fifth.....	5	5	4,661.67	8,671.20	13,332.87	86,552	170,971	257,523	6,264	7,820	178,791	271,607
Sixth.....	7	5	1,193.40	4,394.15	5,587.55	17,047	37,833	54,880	755	5,113	92,946	110,748
Seventh.....	.....	.....	.....	6,972.27	6,972.27	.....	174,296	174,296	.....	8,551	182,847	182,847
Eighth.....	4	4	637.60	16,149.06	16,816.66	9,627	391,570	401,197	.....	6,337	397,907	407,434
Ninth.....	5	5	1,193.95	6,438.75	7,632.70	23,879	128,775	152,654	4,745	6,783	135,558	164,182
Tenth.....	.....	4	1,178.19	1,216.60	2,394.79	4,455	30,417	34,872	.....	2,818	33,235	37,690
Eleventh.....	4.5	4	587.69	6,853.52	7,440.61	13,048	152,300	165,348	1,179	5,768	158,068	172,295
Twelfth.....	5	.....	.....	1,763.32	1,763.32	.....	35,266	35,266	.....	2,083	37,349	37,349
Thirteenth.....	.....	4	.....	1,850.96	1,850.96	.....	46,271	46,271	.....	2,095	43,366	48,366
Total.....	.....	.....	\$24,428.73	\$74,909.20	\$99,337.93	384,559	1,781,858	2,166,417	30,260	70,908	1,852,766	2,267,585
Sprinkling Teams.												
WARDS.	Street intersec- tions, feet.		Length.		Total miles.	Average per team, 1895 - feet.	Number employed, 1895.	Estimated number for 1896.				
	Total feet.	Total miles.										
First.....	8,518	83,437	15.802	6,972	9	12						
Second.....	13,553	102,016	19.321	7,764	13	13						
Third.....	16,720	148,569	28.138	8,266	17	18						
Fourth.....	15,063	137,363	26.016	5,728	24	24						
Fifth.....	16,461	152,264	28.838	6,632	22	22						
Sixth.....	8,466	63,840	12.091	6,213	10	10						
Seventh.....	10,573	101,996	19.317	6,925	13	14						
Eighth.....	13,684	217,401	41.174	8,129	24	26						
Ninth.....	10,129	95,220	17.466	7,965	12	13						
Tenth.....	2,395	21,240	4.023	7,400	3	3						
Eleventh.....	11,110	97,258	18.420	6,842	14	14						
Twelfth.....	2,947	21,621	4.094	6,091	3	3						
Thirteenth.....	3,539	27,723	5.251	8,031	3	4						
Total.....	133,158	1,266,948	23.9951	7,081	167	176						

* Park avenue ten cents. * Portland avenue seven cents.

Sprinkling Teams.

WARDS.

WARDS.	Street intersec- tions, feet.	Total feet.	Total miles.	Average per team, 1895 - feet.	Number employed, 1895.	Estimated number for 1896.
First.....	8,518	83,437	15.802	6,972	9	12
Second.....	13,553	102,016	19.321	7,764	13	13
Third.....	16,720	148,569	28.138	8,266	17	18
Fourth.....	15,063	137,363	26.016	5,728	24	24
Fifth.....	16,461	152,264	28.838	6,632	22	22
Sixth.....	8,466	63,840	12.091	6,213	10	10
Seventh.....	10,573	101,996	19.317	6,925	13	14
Eighth.....	13,684	217,401	41.174	8,129	24	26
Ninth.....	10,129	92,220	17.466	7,965	12	13
Tenth.....	2,395	21,240	4.023	7,400	3	3
Eleventh.....	11,110	97,258	18.420	6,842	14	14
Twelfth.....	2,947	21,621	4.094	6,091	3	3
Thirteenth.....	3,539	27,723	5.251	8,031	3	4
Total.....	133,158	1,266,948	23.9951	7,081	167	176

TABLE NO. 48.—*Concluded.*

WARDS.	SIDEWALK REPAIRS.			Cross-walks— new and repairs, Cost.	GRADING.			Total amount expended for ward purposes.
	Cost of materials and inci- dentals.	Cost of labor.	Total cost		Stone side walks.	Street.	Total cost.	
First	\$100.37	\$59.50	\$159.87	\$108.31	.....	\$976.94	\$976.94	\$11,502.05
Second	104.22	262.75	366.97	358.43	.....	3,250.34	3,778.69	17,283.84
Third	111.01	703.34	814.35	261.74	.....	10,170.14	11,368.56	31,315.33
Fourth	925.07	217.80	1,142.87	53.59	.....	5,133.69	5,487.09	38,159.11
Fifth	131.24	20.00	151.24	909.63	.....	.....	.....	27,712.90
Sixth	50.32	414.76	465.08	116.46	.....	274.65	620.60	12,308.35
Seventh	276.75	431.69	708.44	180.81	.....	5,202.09	5,202.09	14,333.93
Eighth	141.99	63.00	204.99	671.56	.....	8,649.18	8,649.18	29,071.39
Ninth	95.65	282.76	378.41	128.82	.....	3,674.80	4,214.91	15,722.83
Tenth .....	.....	141.60	141.60	146.70	.....	4,395.31	4,395.31	8,220.88
Eleventh .....	.....	329.05	329.05	200.74	.....	.....	.....	14,475.87
Twelfth	205.03	205.50	410.53	23.48	.....	4,504.13	4,504.13	7,079.58
Thirteenth	189.77	.....	189.77	150.51	23.63	5,284.84	5,308.47	9,604.91
Totals	\$2,331.42	\$3,131.75	\$5,463.17	\$3,370.78	\$2,098.86	\$51,216.11	\$54,214.97	\$336,950.97

Cost of cleaning and sweeping asphalt pavement: *Hennepin avenue, 1.82 cents per square yard per month.

*Nicollet avenue, 1.82 cents per square yard per month.

†Park avenue, 0.26 cents per square yard per month

TABLE NO. 50.

SUMMARY OF ALL WATER MAINS LAID PREVIOUS TO JANUARY 1st, 1896.

Size in inches.	Feet.
6 Hydrant connections.....	21,818
4 Pipe in Anoka county.....	1,109.2
6 Pipe, including Anoka county	\$95,619.6
8 Pipe.....	255,230.8
10 Pipe.....	16,147
12 Pipe.....	179,461.1
16 Pipe.....	65,262.9
20 Pipe.....	930
24 Pipe.....	76,899.6
30 Pipe.....	915
36 Pipe.....	21,693
Total feet.....	1,235,086.2
Total miles.....	233.91
Total cost.....	\$2,500,794.00

TABLE NO. 51.

WATER MAINS LAID DURING THE SEASON OF 1895.

The following named water mains were laid by the city by day work. The abutting property was assessed sixty-five (65) cents per front foot, regardless of the size of the main.

STREET.	FROM—	TO—	Size, inches.	Number of extension.	Length feet.	Cost.
N Aldrich av.....	27th av.....	30th av.....	6	889	1,281.8	\$975.44
Blaisdell av.....	34th st.....	35th st.....	6	891	668.8	453.43
*Bedford st.....	Clarence av.....	Hamlin av.....	6	967	844.7	877.78
Blaisdell av.....	39th st.....	40th st.....	6	892	638.3	448.08
N Bryant av.....	26th av.....	27th av.....	6	893	656.3	539.50
S Bryant av.....	27th st.....	28th st.....	6	894	620.4	471.45
Cedar av.....	34th st.....	37th st.....	8	895	1,949.8	1,796.17
N Colfax av.....	5th av.....	6th av.....	6	897	545.9	625.75
N Colfax av.....	26th av N.....	27th av N.....	6	898	621.9	497.45
Columbus av.....	34th st.....	35th st.....	6	899	646.1	440.79
†Central av.....	37th av NE.....	39th av NE.....	8	900	982.5	1,226.53
Dupont av.....	8th av N.....	11th av N.....	8	900	943.6	871.48
S Dupont av.....	37th st.....	38th st.....	12	901	863.7	1,400.81
Eleventh av S.....	25th st.....	26th st.....	12	904	684.9	911.28
Emerson av.....	29th av N.....	32nd av N.....	6	903	1,340.4	1,106.37
Filmore st.....	23rd av NE.....	25th av NE.....	8	905	630.8	691.72
*1st st S.....	19th av.....	20th av.....	6	969	410.4	425.91
4th st N.....	26th av.....	29th av.....	6	907	1,302.9	1,033.41
5th av S.....	32nd st.....	33rd st.....	6	911	697.9	546.79
5th st N.....	Plymouth av.....	20th av.....	6	912	2,635.1	2,095.39
14th av S.....	Lake st.....	33rd st.....	6	913	1,977.1	1,574.12
15th av N.....	Aldrich av.....	Bryant av.....	6	914	398.8	388.14
Girard av.....	26th av N.....	29th av N.....	16	916	1,288.7	2,767.36
*S Girard av.....	29th st.....	Lake st.....	6	973	581.2	505.01
S Irving av.....	Franklin av.....	22nd st.....	6	919	640.2	653.75
Island Park Boul.....	Franklin av.....	21st st.....	6	920	367.5	595.61
N James av.....	40 ft. S of 30th av.....	32nd av.....	6	921	742.7	648.84
S James av.....	Franklin av.....	22d st.....	6	922	715.5	740.15
*Kenwood boul.....	Present Termin's	Lk of Isles boul.....	12	970	55.6	205.28
*Lk of Isles boul.....	Kenwood boul.....	24th st.....	12	971	250	529.79
*Longfellow av.....	Lake st.....	31st st.....	6	924	626.4	575.87
**Main st.....	2d av SE.....	130 ft north.....	8	974	155.1	339.48
Morgan av.....	19th av N.....	Crystal Lake av.....	6	926	504.3	637.35
Morgan av.....	30th av N.....	32d av N.....	6	927	705.7	559.16
**Newton av.....	19th av N.....	21st av N.....	6	1,027	467.1	593.27
Nicollet av.....	37th st.....	38th st.....	8	929	659.6	630.19
9th av S.....	26th st.....	28th st.....	6	931	1,330	1,087.56
9th av S.....	Lake st.....	32d st.....	12	932	1,445.6	2,084.62
9th av S.....	35th st.....	37th st.....	6	933	1,311.2	1,011.75
*19th av S.....	160 ft N of 1st st.....	2d st.....	6	968	735.4	838.59
19th av S.....	Lake st.....	34th st.....	6	934	2,556.1	1,768.99
Oak st.....	Fulton st.....	River Road.....	12	935	419.6	713.36
Oakland av.....	32d st.....	33d st.....	6	936	669	444.86
Penn av.....	6th av N.....	S line B'd'k's add.....	24	938	1,026.4	3,602.30
Pierce st.....	Winter st.....	Summer st.....	6	940	1,275.3	1,052.35
Polk st.....	Spring st.....	Summer st.....	6	942	615.3	524.63
Polk st.....	26th av NE.....	29th av NE.....	6	943	1,989.1	1,582.78
Queen av.....	30th av N.....	32d av N.....	6	944	629.9	492.68

MAP
OF
MINNEAPOLIS,

HENNEPIN CO., MINN.

1896

BY
CITY ENGINEERS OFFICE.

F.W.CAPPELEN.
City Engineer

SCALE, 2000 FT. TO ONE INCH.

CITY DATUM 709.533 FT ABOVE SEA LEVEL

EXPLANATIONS.

- RAILROADS
STREET CAR LINES.
CONTOUR LINES.
BRIDGES
PARKS & BOULEVARDS.
WATER
MAINS
- 6" and 8"
10" to 24"
over 24"
Proposed.

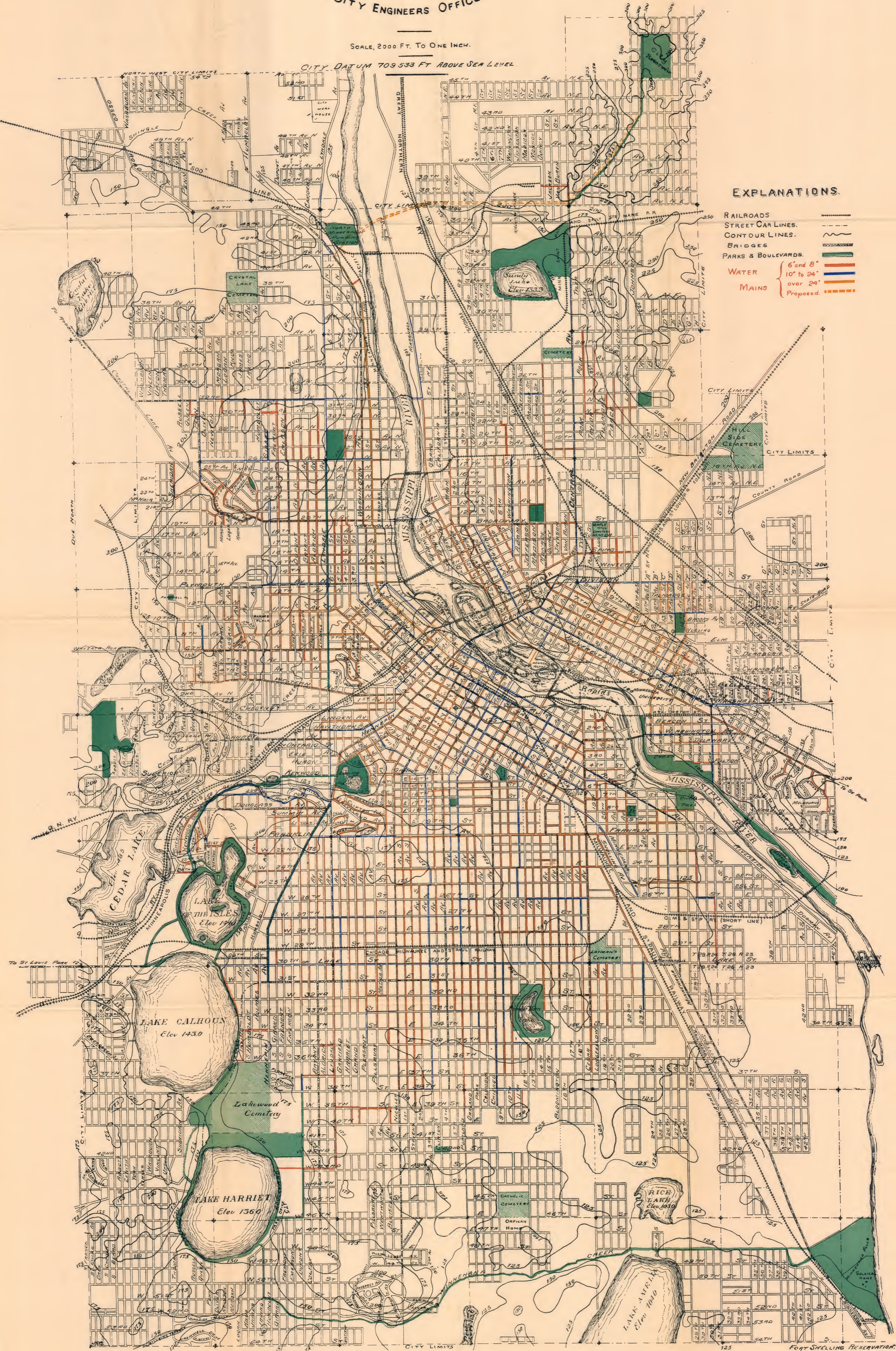


TABLE NO. 51.—*Concluded.*

STREET.	FROM—	TO—	Size, inches.	Number of extension.	Length feet.	Cost.
2d av S.....	37th st.....	38th st.....	6	946	716	614.55
6th st.....	16th av N.....	20th av N.....	6	947	1,451.2	1,152.78
6th st NE.....	18th av N.....	55f Nof N line22av	6	A948	1,435.9	2,189.99
7th st NE.....	16th av.....	17th av.....	6	949	415.3	408.53
W 21st st.....	Penn av.....	Island Park boul	6	952	895.7	1,101.52
W 22d st.....	Humboldt av.....	Irving av.....	6	954	434.3	271.01
*22d av N E.....	6th st.....	6th st.....	16	B948	170.1	476.63
23d av S.....	Lake st.....	33d st.....	12	955	1,944.1	2,737.58
*W 24th st.....	Lake of the Isles Boulevard.....	Sheridan av.....	6	972	785.3	926.15
26th st.....	29th av S.....	31st av S.....	12	957	797.9	1,365.51
E 27th st.....	Columbus av.....	Chicago av.....	6	958	355.8	311.36
30th av N.....	Fremont av.....	Humboldt av.....	6	961	619.8	657.88
30th av N.....	Penn av.....	Queen av.....	6	962	323.9	326.94
31st av S.....	26th st.....	Lake st.....	8	963	2,602.7	2,701.53
32d av N.....	Lyndale av.....	Logan av.....	24	966	3,834.7	14,721.63
W 35th st.....	Lyndale av.....	Bryant av.....	6	964	620	561.49
W 39th st.....	Blaisdell av.....	Grand av.....	6	965	1,207.5	964.96
††39th av N E.....	Central av. alley	E of Rolling Mill.	4	Anok.2	1,109.2	629.38
Total.....					62,724.0	\$76,702.87

*Taxes of 1895.

**Taxes of 1896.

†No assessment; paid by Gas Light Co.

††No assessment; paid by Minneapolis Improvement Co.

SUMMARY.

Size in inches.	Feet.	Cost.
4 inches.....	1,109.2	\$629.38
6 inches.....	41,991.9	37,526.77
8 inches.....	6,941.6	7,030.57
12 inches.....	6,361.4	9,948.21
16 inches.....	1,458.8	3,243.99
24 inches.....	4,861.1	18,323.93
Total.....	62,724.0	\$76,702.87
Incidentals.....		\$2,472.60
Total.....	11.88 Miles.	\$79,175.47

TABLE NO. 52.

WATER MAINS ORDERED TO BE ASSESSED IN THE TAXES OF 1895.

STREET.	FROM—	TO—	Size in inches.	No. of extension.	Length feet.	Cost.	Amt. of assessment.
S. Aldrich av.....	34th st	35th st.....	6	975	645	\$838.50	\$711.36
*Bedford st.....	Clarence av....	Hamlin av.....	6	967	930	1,209.70	908.41
N. Bryant av.....	25th av.....	26th av.....	6	976	460	598.00	390.00
Columbus av.....	28th st.....	Lake st.....	6	977	1,357	1,764.10	1,332.25
Columbus av.....	35th st.....	36th st.....	6	978	656	852.80	760.89
N. Dupont av.....	29th av.....	32nd av.....	8	980	1,329	1,860.60	1,402.31
N. Emerson av.....	16th av.....	N. of 18th av....	6	985	982	1,276.60	942.49
8th av. N. E.....	5th st.....	Washington st..	6	984	589	765.70	349.77
18th av. N.....	Aldrich av.....	Bryant av.....	6	981	396	514.80	293.15
18th av. S.....	28th st.....	Lake st.....	12	982	1,307	2,548.65	1,260.22
18th av. N. E.....	Central av.....	Polk st.....	6	983	535	695.50	472.16
Filmore st.....	25th av. N. E....	26th av. N. E....	8	988	662	926.80	780.13
1st st. S.....	13th av.....	14th av.....	6	989	398	517.40	350.35
4th st. N.....	23d av.....	26th av.....	6	990	1,273	1,654.90	1,277.90
4th st. N. E.....	Broadway st....	13th av.....	6	991	798	1,037.40	3,136.84
4th st. N. E.....	13th av.....	18th av.....	16	992	1,966	5,013.33	794.30
5th av. S.....	38th st.....	39th st.....	6	987	628	816.40	779.74
15th av. S.....	32nd st.....	33rd st.....	6	986	660	858.00	749.77
Garfield av.....	34th st.....	35th st.....	6	993	645	838.50	1,317.42
S. Girard av.....	22nd st.....	25th st.....	6	994	1,301	1,691.30	677.95
S. Girard av.....	27th st.....	28th st.....	6	995	613	796.90	645.06
*S. Girard av.....	29th st.....	Lake st.....	6	973	582	756.60	670.54
S. Humboldt av....	Lake st.....	31st st.....	8	969	1,315	1,841.00	2,427.16
Jackson st.....	18½ av. N. E....	25th av. N. E....	6	997	2,255	2,931.50	253.50
*Kenwood boul....	Pres. Terminus	Lake of Is. boul	12	970	130	253.50	393.90
*Lake of Isles boul	Kenwood boul....	24th st.....	12	971	202	263.90	819.00
*Longfellow av....	Lake st.....	31st st.....	6	924	630	819.00	3,329.30
Longfellow av....	31st st.....	35th st.....	6	998	2,561	3,329.30	1,760.20
Motor av.....	Lake st.....	32nd st.....	6	999	1,354	1,760.20	1,111.50
9th st. S. E.....	3rd av.....	5th av.....	6	1,001	855	1,111.50	883.35
19th av. N.....	Morgan av.....	Newton av.....	12	1,000	352	686.40	1,723.80
Oakland av.....	33rd st.....	35th st.....	6	1,002	1,326	1,723.80	1,541.54
N Penn av.....	S in Brodrick ad	Crystal Lake a	24	1,003	6,084	27,878.00	7,628.32
Pierce st. N. E....	Summer st.....	Broadway st....	6	1,004	672	873.60	772.20
Pleasant av.....	35th st.....	36th st.....	12	1,005	650	1,267.50	765.96
Polk st.....	18th av. N. E....	19th av. N. E....	6	1,006	694	902.20	774.80
2nd st. N. E.....	13th av.....	25th av.....	6	1,007	4,472	5,813.60	4,797.60
6th st. N.....	24th av.....	25th av.....	6	1,012	450	596.70	228.60
6th st. N.....	32nd av.....	33rd av.....	6	1,013	625	812.50	702.78
7th st. S.....	Riverside av....	25th av.....	6	1,008	644	837.20	598.00
16th av. S.....	22nd st.....	26th st.....	6	1,009	2,010	2,613.00	2,026.72
16th av. S.....	27th st.....	28th st.....	6	1,010	618	803.40	564.72
16th av. S.....	Lake st.....	32nd st.....	6	1,011	1,309	1,701.70	1,466.73
10th av. S.....	25th st.....	26th st.....	6	1,014	676	878.80	749.71
20th av. S.....	Lake st.....	31st st.....	6	1,017	630	819.00	703.82
21st av. S.....	Washington st..	4th st.....	6	1,021	1,230	1,599.00	1,196.66
22nd st.....	14th av. S.....	Bloomington a	6	1,023	651	486.30	581.36
*22nd av. N. E....	6th st.....	6th st.....	16	B 948	189	481.95	146.25
23rd av. N. E.....	Johnson st.....	"B" st.....	6	1,025	751	976.30	389.22
*W 24th st.....	Lake of I. boul.	Sheridan av....	6	972	729	947.70	980.98
24th av. N. E.....	Polk st.....	Taylor st.....	6	1,022	528	686.40	278.20
25th av. N.....	4th st.....	6th st.....	6	1,019	396	514.80	250.25
W 25th st.....	Hennepin av....	Girard av.....	6	1,020	393	510.90	332.99
27th av. S.....	24th st.....	25th st.....	6	1,024	724	941.20	705.51
W. 28th st.....	Blaisdell av....	Pillsbury av....	6	1,018	430	559.00	319.80
W. 34th st.....	Garfield av....	Lyndale av....	6	1,016	400	520.00	220.85
38th st.....	5th av. S.....	Portland av....	16	1,015	345	879.75	274.95
Willow av.....	Logan av.....	Penn av.....	6	1,026	1,076	1,393.80	1,045.27
Total.....					57,077	\$98,841.15	\$58,363.61

*Laid in 1895.

§ Laid in the year 1895 3,392 \$4,861.65

† To be laid in the year 1896 53,685 93,979.50

\$ 57,077 \$98,841.15

‡ 10.81 miles. † 10.17 miles. § 0.64 miles.

Summary of Water Mains to be laid in the Year 1896.

	Feet.	Rate.	Cost.
6 inches.....	39,675	\$1.30	\$51,577.50
8 inches.....	3,306	1.40	4,628.40
12 inches.....	2,309	1.95	4,502.55
16 inches.....	2,311	2.55	5,893.05
24 inches.....	6,084	4.50	27,378.00
Total.....	53,685	.....	\$93,979.50

TABLE NO. 53.
ADDITIONS TO MINNEAPOLIS APPROVED IN 1895.

	Number of tracing.	Date approved, 1895	Number of lots.	Area platted exclusive of re-arrangements, subdivisions, etc. Square feet.
Staples addition to Minneapolis.....	961	April 30th ...	9	
L. P. Crevier's addition to Minneapolis.....	962	June 15th....	60	429,582
Eldorado park	963	August 8th..	188	1,368,844
Berquist's subdivision of lot 9, auditor's sub. No. 26	964	October 7th.	16	
Martin's addition to Minneapolis.....	965	Decemb'r 4th	110	635,052
Cataract addition to Minneapolis.....	966	Decemb'r 4th	60	432,166
Re-arrangement of blocks 2 and 3, of Camp & Waiker's addition to Minneapolis.....	967	D'c'mb'r 20th	20	
Total.....			463	2,865,044
Total acres.....				65.785

*Block 54,	Washington av N	Center of block	1	1	2	244	24
*Block 55,	2d av N	Center of block	1	1	2	230	23
*Block 56,	1st av N	Center of block	1	1	2	188	193
*Block 57,	2d av N	Center of block	1	1	2	160	188
*Block 58,	4th st N	Center of block	1	1	3	178	178
*Block 59,	3d st S	Center of block	1	1	4	179	179
*Block 60,	4th st S	Center of block	1	1	3	252	252
*Block 61,	1st av S	Center of block	1	1	3	150	150
*Block 62,	2d av S	Center of block	1	1	3	380	380
*Block 63,	Center Block 65	Center of block	1	1	2	95	95
*Block 64,	2d av S	Center of block	1	1	3	210	210
*Block 65,	1st av S	Center of block	1	1	5	288	288
*Block 66,	Nicollet av	Center of block	12	12	144	172	172
*Block 67,	Nicollet av	Center of block	1	1	186	186	186
*Block 68,	4th st S	Center of block	1	1	606	606	606
*Block 69,	4th st S	Center of block	1	1	562	562	562
*Block 70,	Nicollet av	Center of block	1	1	2	183	183
*Block 71,	4th st N	Center of block	1	1	2	427	427
*Block 72,	Hennepin av	Center of block	1	1	3	175	175
*Block 73,	2nd av S	Center of block	1	1	3	114	114
*Block 74,	7th st S	Center of block	1	1	2	203	203
*Block 75,	7th st S	Center of block	1	1	2	223	223
*Block 76,	7th st S	Center of block	1	1	2	112	112
*Block 77,	7th st S	Center of block	1	1	2	240	240
*Block 78,	Property line	Center of block	1	1	3	65	65
*Block 79,	1st av S	Center of block	1	1	3	196	196
*Block 80,	Nicollet av	Center of block	1	1	3	371	371
*Block 81,	Nicollet av	Center of block	1	1	3	300	300
*Block 82,	Nicollet av	Center of block	1	1	3	306	306
*Block 83,	1st st	Bridge	2	12	15	1159	1159
*Block 84,	Steel arch bridge	Stone arch bridges	2	12	15	400	400
*Block 85,	Washington av S	3d st S	2	12	1,150	1,150	1,150
*Block 86,	Washington av S	4th st	1	1	1,065	1,065	1,065
*Block 87,	Central av	Central av	2	12	354	354	354
*Block 88,	Stone arch bridge	Main st	2	16	1,312	1,312	1,312
*Block 89,	Main st	5th st	1	1	330	330	330
*Block 90,	5th st	6th st	1	1	449	449	449
*Block 91,	Central av	2d av S	1	1	2,547	2,547	2,547
*Block 92,	1st av S	8th st	1	1	3	186	186
*Block 93,	Washington av	N. H. opp. alley	1	1	2	1,050	1,050
*Block 94,	Washington av	blk. 231 B & J.	1	1	2	80	80
*Block 95,	8th st	11th st S	1	1	2	90	90
*Block 96,	M. H. opp. alley	230 1st av S	1	1	1	80	80
*Block 97,	Block 231 B & J.	315 1st av S	1	1	1	80	80
*Block 98,	229 1st av S	Alley opp.	1	1	1	435	435
*Block 99,	312 1st av S	Alley block 55	1	1	1	80	80
*Block 100,	412 1st av N	Alley (west)	1	1	1	80	80
*Block 101,	Alley block 54	Alley (west)	1	1	1	80	80
*Block 102,	Washington av	323 1st av S	1	1	1	80	80
*Block 103,	People's Theatre	Hennepin L dry	1	1	1	260	260
*Block 104,	1st st		1	1	1	260	260

TABLE No. 54.—Continued.

STREET.	FROM—	TO—	NORTHWESTERN TELEPHONE EXCHANGE.				MINNEAPOLIS ELECTRICAL SUBWAY CO.—DORSET AND IRON PIPE.				EDISON LIGHT AND POWER CO.			WESTERN UNION TELEGRAPH COMPANY.			INTER-NATIONAL ELECTRIC CO.		Total length of conduits, feet.
			No. of conduits.	No. of ducts.	Length of conduits, feet.	Side of street.	Number of conduits.	Number of ducts.	Length of conduits, feet.	Side of street.	No. of pipes, 2	Length of pipe, feet.	No. of pipes.	Length of pipe, feet.	No. of pipes.	Length of pipe, feet.			
1st av N	Washington av.	1st st	1	6	920	South.	1	6	46	East.	1	380	1	380	1	380	920	46	920
1st av N	Washington av.	Cable pole	1	6	46	East.	1	6	46	East.	1	380	1	380	1	380	46	46	46
1st av S	Washington av.	3d st.	2	12	820	East.	2	12	820	East.	1	456	1	456	1	456	820	820	820
1st av S	Washington av.	4th st.	1	6	410	East.	1	6	410	East.	1	456	1	456	1	456	410	410	410
1st st N	Bridge square.	1st av.	1	1	420	South.	1	1	420	South.	1	420	1	420	1	420	420	420	420
1st st N	Bridge square.	3d av.	1	1	221	North.	1	1	221	North.	1	420	1	420	1	420	221	221	221
*1st st S	Bridge square.	1st av.	1	4	221	North.	1	4	221	North.	1	420	1	420	1	420	221	221	221
*4th av S	Washington av.	3d st.	1	2	465	West.	1	2	465	West.	1	413	1	413	1	413	1,148	1,148	1,148
4th st N	Hennepin av.	1st st.	1	6	572	South.	1	6	572	South.	1	130	1	130	1	130	703	703	703
4th st S	Hennepin av.	3d st.	1	6	572	South.	1	6	572	South.	1	130	1	130	1	130	992	992	992
4th st S	Hennepin av.	Nicollet av.	1	6	572	South.	1	6	572	South.	1	130	1	130	1	130	130	130	130
4th st S	Hennepin av.	Alley block 81.	1	6	572	South.	1	6	572	South.	1	130	1	130	1	130	270	270	270
*4th st S (across).	13 4th st S.	16 4th st S.	1	14	4th st S.	South.	1	14	4th st S.	South.	1	130	1	130	1	130	130	130	130
*4th st S (across).	15 4th st N.	16 4th st N.	1	16	4th st N.	South.	1	16	4th st N.	South.	1	130	1	130	1	130	130	130	130
4th st S	47 4th st S.	46 4th st S.	1	46	4th st S.	South.	1	46	4th st S.	South.	1	130	1	130	1	130	130	130	130
4th st S	Nicollet av.	Alley block 81.	5	30	495	North.	5	30	495	North.	5	1,405	5	1,405	5	1,405	1,405	1,405	1,405
4th st S	Nicollet av.	Telephone h'dq'rs	2	12	616	North.	2	12	616	North.	2	456	2	456	2	456	1,371	1,371	1,371
4th st S	Telephone h'dq'rs	1st av.	2	12	616	South.	2	12	616	South.	2	456	2	456	2	456	1,492	1,492	1,492
4th st S	1st av.	2d av.	1	4th av.	1st av.	South.	1	4th av.	1st av.	South.	1	410	1	410	1	410	410	410	410
4th st S	1st av.	2d av.	1	4th av.	1st av.	South.	1	4th av.	1st av.	South.	1	410	1	410	1	410	410	410	410
*5th st S (across).	Alley.	135th st S.	1	135th st S.	135th st S.	South.	1	135th st S.	135th st S.	South.	1	2,624	1	2,624	1	2,624	2,624	2,624	2,624
*5th st S.	Nicollet av.	Point opp. 5th st entrance to S.E.	1	3	North.	1	3	North.	1	3	North.	1	662	1	662	1	662	1,192	1,192
5th st S	Hennepin av.	Nicollet av.	1	1	520	South.	1	1	520	South.	2	1,080	2	1,080	2	1,080	1,080	1,080	1,080
5th st S	Hennepin av.	Nicollet av.	1	1	520	South.	1	1	520	South.	2	1,080	2	1,080	2	1,080	821	821	821
5th st S	1st av.	3d av.	1	6	821	South.	1	6	821	South.	1	134	1	134	1	134	134	134	134
5th st S	2d av. S, main entrance	N. Y. Life Bldg.	1	1	75	North.	1	1	75	North.	1	134	1	134	1	134	134	134	134
5th st S	Central av.	1st av.	1	6	75	North.	1	6	75	North.	1	134	1	134	1	134	75	75	75

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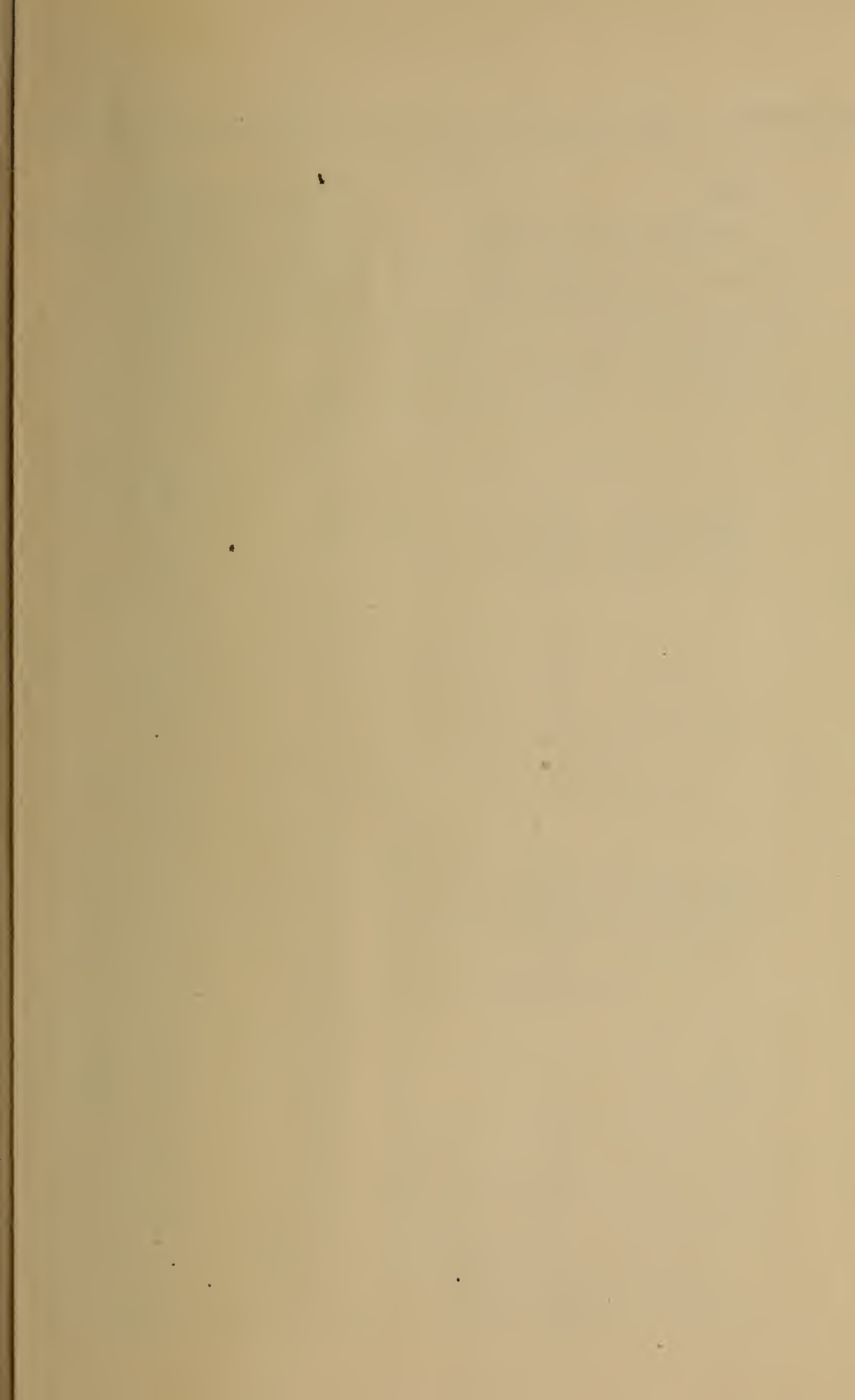
*2nd av S	6th st	11th st	East	1	2	2,047	1	80	2,047
*6th st S (across)	49th st S	50th st S	Nicollet av.	80	...
6th st S	Hennepin av.	Nicollet av.	...	...	...	...	...	80	...
6th st S (across)	Nicollet av.	Glass block	...	...	...	...	...	614	...
6th st S	Nicollet av.	1st av S	South	1	2	* 216	1	400	...
6th st NE	Central av.	Cable pole	...	...	...	...	...	...	...
6th st SE	Central av.	Cable pole	...	...	...	...	...	...	...
7th av S	Washington av.	3rd st	West	1	1	* 237	...	...	...
7th st	Western av.	Nicollet av.	...	...	...	...	...	...	...
7th st S	Hennepin av.	Nicollet av.	North	1	2	* 187	...	...	...
7th st S	Nicollet av.	Nicollet av.	North	1	3	* 187	...	...	...
*7th st S	{ Man-hole NW cor	{ Building SE cor	...	...	...	...	...	...	...
	{ 1st av S	{ 1st av S	...	...	...	...	...	...	...
47th st S	1st av S	Man-hole 223 ft. W	North	1	3	223	...	...	...
3rd av N	Western av.	Railroad	North	1	12	+961	...	...	...
3rd av N	Washington av	4th st	North	1	...	...	...	820	...
3rd av S	3rd st	4th st	...	...	...	...	...	...	...
3rd av S	5th st	Cable pole	East	2	12	396	...	...	...
3rd st N	Hennepin av.	2nd av	East	1	6	64	...	...	...
3rd st N	Hennepin av.	3rd av	...	...	...	...	...	...	...
3rd st S	Hennepin av.	Nicollet av.	South	1	3	*107	...	...	...
3rd st S	Hennepin av.	1st av	South	1	1	*169	...	...	...
3rd st S	Nicollet av.	1st av	South	1	1	...	...	...	...
3rd st S	Hennepin av.	2nd av	...	...	...	...	...	...	...
3rd st S	1st av	4th av	South	2	12	2,300	...	...	...
3rd st S	2nd av	4th av	South	1	6	785	...	...	...
3rd st S	4th av	5th av	South	1	3	1,410	...	...	...
3rd st S	5th av	10th av	West	1	...	...	...	...	...
3rd av N	Washington av	2nd st	...	...	...	...	...	...	...
3rd st N	3rd st S	24 3rd st S	...	...	...	...	...	...	...
3rd st S	23 3rd st S	6 3rd st N	...	...	...	...	...	...	...
*3rd st N (across)	17 3rd st S	18 3rd st S	...	...	...	...	...	...	...
*3rd st S (across)	47 3rd st S	Alley (opp.)	...	...	...	...	...	...	...
	{ Point below SE	{ Point beyond S	...	...	...	...	...	...	...
	{ cor Hennepin av.	{ W cor Henne-	...	...	...	...	...	...	...
*3rd st N and S	2nd st	Washington av.	West	1	8	385	...	...	...
*10th av S	Washington av	4th st	West	1	6	805	...	...	...
10th av S	Washington av.	3d st	East	1	1	* 235	...	...	...
10th st S	Hennepin av.	Nicollet av.	North	1	1,693	...	...	...	...
*12th st	Washington av.	Cable pole	...	...	...	...	...	...	...
12th av S	Washington av.	3d st	East	1	1	* 158	...	...	...
Washington av N	3d av	1st av	East	2	18	+1,666	...	...	...
Washington av N	2d av	1st av	East	1	...	...	...	...	...
Washington av N	1st av	Hennepin av.	East	1	...	...	...	...	...
Washington av N	1st av	Hennepin av.	East	2	18	+ 830	...	...	...
Washington av N	1st av	Hennepin av.	West	1	...	...	...	...	...
Washington av S	Hennepin av.	Nicollet av.	North	2	21	+ 630	...	...	...

TABLE NO. 54.—*Concluded.*

STREET.	FROM —	To —	NORTHWESTERN TELEPHONE EXCHANGE.				MINNEAPOLIS ELECTRICAL SUBWAY CO.—DORSET AND IRON PIPE.				EDISON LIGHT AND POWER CO				WESTERN UNION TELEGRAPH COMPANY.				INTERNATIONAL ELECTRIC CO.		Total length of conduits, feet.
			Side of street.	No of conduits.	No of ducts.	Length of conduits, feet.	Side of street.	Number of conduits.	Number of ducts.	Length of conduits, feet.	Side of street.	No. of pipes, ²	Length of pipe, feet.	Side of street.	No. of pipes.	Length of pipe, feet.	Number of pipes.	Length of pipe, feet.			
Washington av N.....	1st av.....	5th av.....	West..	1	2	2,400	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	2,400	2,400	
Washington av S.....	Hennepin av.....	Nicollet av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	3,284	3,284	
Washington av S.....	Washington av S.....	Nicollet av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	1,642	1,642	
Washington av S.....	Washington av S.....	Nicollet av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	1,240	1,240	
Washington av S.....	2d av.....	3d av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	820	820	
Washington av S.....	Washington av S.....	3d av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	820	820	
Washington av S.....	2d av.....	3d av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	1,640	1,640	
Washington av S.....	3d av.....	4th av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	4,926	4,926	
Washington av S.....	Washington av S.....	10th av.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	6,160	6,160	
Washington av S.....	4th av.....	Washington av S.....	South.	1	2	143	North.	2	21	1,642	North.	2	2	1,642	North.	2	2	1,642	14,600	14,600	
Washington av N.....	10th av.....	Cedar av.....	South.	1	5	1,740	North.	2	18	820	North.	2	2	820	South.	2	2	820	4,926	4,926	
Washington av N.....	5th av N.....	Plymouth av.....	West..	1	1	14,600	North.	2	12	4,420	North.	2	12	4,420	North.	2	12	4,420	6,160	6,160	
*Washington av S.....	49 Washington av..	101 Washington av..	West..	1	1	14,600	North.	2	12	4,420	North.	2	12	4,420	North.	2	12	4,420	14,600	14,600	

The conduits used by the Telephone Exchange Co., are made of vitrified clay pipe, rectangular in form and contain two (2) compartments into each of which six (6) cables are drawn. The Brush Electric Light Co. uses the Dorset conduit of the Minneapolis Electric Subway Co., which is made of an asphalt composition, but in making extensions of its underground system, the Brush Company has used iron pipe. The Edison Light and Power Co. used a cast iron pipe containing three (3) wires. The Telephone and Brush Co.'s distribute service connections from a pole in the center of the block. The Edison Co. can run a service connection underground from every joint of pipe directly to the house.

*Iron pipe. †Dorsett. **Edison—3-wire tube. *Cement-lined pipe (3-inch diameter).



MUNICIPAL SUBWAY.—Carrying Fire Alarm and Police Telephone Wires.

TABLE No. 55.

STREET.	FROM—	TO—	Side of street.	PIPES.						CABLE.						No. OF NEW MANHOLES		LOCATION OF MANHOLES.																
				Number of	Size.	Length.	LATERALS.		Total feet. 2-inch pipe.	Total feet. 3-inch pipe.	Number.	Conductors.	Length.	LATERALS.										KINDS OF										
							Number	Size.						Length.	Number	Cond'ts	Length.	New.	Old.															
Nicollet av.....	City Hall manhole.....	Dorsett M. H., n. w. cor. 4th st. S.	West.....	Dorsett conduit	1,333	1	3-inch	*18	{	18	{	1	70	1,370	1	70	{	New	{	1														West side of street and 92 5 north from Dorsett M. H. on n. w. cor. Nicollet av. and Second st.
Fourth st. N.....	Dorsett M. H., n. w. cor. Nicollet av.	Manhole opp. new M. F. D. headquarters.	North.....	3-inch	1,345	2	3-inch	*36		1,381		1	80	702				New		2														North side of street and opp. proposed new M. F. D. headquarters.
Across Fourth st. N.....	Manhole opp. new M. F. D. headquarters.	Operator's room, new M. F. D. headquarters.		3-inch	325.8					325.8		3	50	743				New																
Fourth st. S.....	Dorsett M. H., n. w. cor. Nicollet av.	Dorsett M. H., n. e. cor. 3d av. S.	North.....	Dorsett conduit	1,194	1						1	80	1,326				New																
Third av. S.....	Dorsett M. H., n. e. cor. 4th st. S.	Manhole s. e. cor. 5th st. S.	East.....	3-inch	492	1	3-inch	34		526		1	80	492	1	80	34	New		1														S. e. cor. Fifth st. and Third av. S.
Nicollet av.....	Dorsett M. H., n. w. cor. 4th st. S.	Dorsett M. H., n. w. cor. 9th st. S.	West.....	Dorsett conduit	2,045	1	2-inch	18		18		1	10	2,117	1	10	30	New				1												
Nicollet av.....	Dorsett M. H., n. w. cor. 9th st. S.	Manhole n. w. cor. 12th st. S.	West.....	2-inch	1,238	1	2-inch	16		1,279		1	10	1,281	1	4	30	New		3		1												One at n. w. cor. Nicollet av. and Tenth st.
Elghth st. S.....	Dorsett M. H., n. w. cor. Nicollet av. and 8th st.	Manhole n. w. cor. 1st av. S.	North.....	2-inch	400	1	2-inch	9		409		1	6	417	1	6	12	Old		1														One at s. w. cor. Nicollet av. and Eleventh st.
Washington av S.....	Dorsett M. H., n. w. cor. Nicollet av.	Dorsett M. H., n. e. cor. 5th av. S.	North.....	Dorsett conduit	2,150	1	2-inch	12		28.5		1	4	2,150	1	4	15																	One at n. w. cor. Nicollet av. and Twelfth st.
Nicollet av.....	City Hall manhole.....	Dorsett M. H., n. w. cor. 2d st. S.	West.....	Dorsett conduit	89	1	2-inch	*18		18		1	6	100	1	6	*57	Old																
Second st. S.....	Dorsett M. H., n. w. cor. Nicollet av.	Manhole near alley between Nicollet and 1st av. S.	North.....	2-inch	233					233		1	6	243				Old		1														North side of street near n. e. cor alley.
Across Second st. Lock-up Alley.....	Manhole n. e. cor. of Alley	Central lockup station.	E. side of alley	2-inch	160					160		1	6	170	1	6	25	Old																
Sixth st. S.....	Dorsett M. H., n. w. cor. Nicollet av.	Manhole near n. e. cor. Nicollet.	North.....	2-inch	73	1	2-inch	87		160		1	6	76	1	6	95	Old		1		1												North side of street 23.1 east of east curb line.
Hennepin av.....	Dorsett M. H., n. e. cor. 9th st.	Manhole near n. e. cor. 10th st.	East.....	2-inch	333	1	2-inch	8		341		1	6	343	1	6	10	Old		1				1										N. e. cor. Tenth st. and Hennepin av.
Fourth st. N.....	Manhole opp. new M. F. D. headquarters.	N. E. cor. 1st av. N.	North.....	2-inch	160					160		1	50	164				New		1														N. e. cor. of First av. N. and Fourth st.
First av. N.....	Manhole n. e. cor. 4th st.	Dorsett M. H., n. e. cor. Washington av.	East.....	2-inch	858					858		1	50	874				New		1														N. e. cor. of First av. N. and Third st.
Washington av. N.....	Dorsett M. H., n. e. cor. 1st av. N.	Dorsett M. H., n. e. cor. 3d av. N.	North.....	Dorsett conduit	816	1	2-inch	14		14		1	50	834	1	4	25	New																
Third av. N.....	Dorsett M. H., n. e. cor. Washington av.	Manhole at present M. F. D. headquarters.	East.....	Old Box	318							1	50	322	1	50	50	New		1														Manhole on east side of street.
Fourth st. N.....	Manhole opp. new M. F. D. headquarters.	N. W. cor. of 1st av. N.	North.....	2-inch	414	1	2-inch	47		461		1	50	217	1	50	50	New		1														N. w. cor. First av. N. and Fourth st.
First av. N.....	Manhole n. w. cor. of Central av.	Manholes s. w. cor. of Western av.	West.....	2-inch	1,358	1	2-inch	38		1,410		1	50	1,365	1	50	58	New		3				1	1									One at s. w. cor. Fifth st. and First av. N.
First st. N.....	Dorsett M. H., Bridge Square.	N. E. cor. 1st av. N.	North.....	2-inch	428	1	2-inch	15		443		1	4	440	1	4	17	New		2			1											One at n. w. cor. Sixth st. and First av. N.
Nicollet av.....	Manhole at City Hall.	Dorsett M. H., near Steel Arch Bridge.	West.....	Dorsett conduit	318	1	2-inch	18		18		1	30	599	1	30	*57	New																One at n. e. cor. Hennepin av. and First st. N.
Steel Arch Bridge.....	Dorsett M. H., near bridge.	Manhole east end bridge	West.....	2-inch	948					948		1	30	963				New		1														One middle of bridge (wooden).
Central av.....	Manhole at east end Steel Arch Bridge.	Dorsett M. H. 27.35 South. known as W. Isl'n'd av. M. H.		2-inch	24					24		1	30	33				New																One east end of bridge 27.35 n. of Dorsett M. H.
Central av.....	Dorsett M. H., West Island av.	Dorsett M. H., East Island av.	North.....	Dorsett conduit	557	1	2-inch	115		131		1	30	574	1	4	20	New																
Stone Arch Bridge.....	Dorsett M. H., East Island av.	Dorsett M. H., Main st. N. E.	North.....	2-inch	144	1	2-inch	15		461		1	30	450	1	4	18	New																
Central av.....	Dorsett M. H., Main st. N. E.	Dorsett M. H., 5th st. N. E.	West.....	Dorsett conduit	1,686	1	2-inch	80		101		1	30	1,719	2	4	90	New																
Second st. S. E.....	Dorsett M. H., n. w. cor. of Central av.	Manhole at Cataract Engine House.	West.....	2-inch	322	1	2-inch	42		364		1	10	325	1	10	48	New				1												Near n. e. cor. of engine house.
Fourth st. N. E.....	Dorsett M. H., n. e. cor. Central av.	Manhole at 2d Precinct Police Station.	East.....	2-inch	108	1	2-inch	29		128		1	4	113	1	4	29	New				1												Opp. station.
Central av.....	Dorsett M. H., n. e. cor. 5th st.	Manhole opp. s. e. cor. 6th st. S. E. and Central av.	North.....	2-inch	378					378		1	30	387				New		1		1												Angle of Central and Harrison (small), opp. s. e. cor. Sixth st. S. E.
Across Central av.....	Manhole opp. s. e. cor. 6th st. S. E.	Manhole at s. e. cor. 6th st.		2-inch	86	1	2-inch	15		101		2	10	182	2	10	36	New																East cor. of Sixth st. S. E. and Central av.
Central av.....	Manhole opp. s. e. cor. 6th st. S. E.	Manhole at n. e. cor. 6th.	North.....	2-inch	90					90		1	10	98				New		1														East cor. of Central av. and Sixth st. N. E.
Sixth st. N. E.....	N. E. cor. of Central av.	Manhole at n. e. cor. 1st av. N. E.	North.....	2-inch	249	1	2-inch	25		274		1	10	254	1	10	15	New				1												N. E. cor. of Sixth st. N. E. and First av.
											9,499.5	2,268.8																						

* Into operator's room, City Hall. Into distributing box, n. w. cor. Nicollet av. and Fourth st.

TABLE NO. 56.

SPECIAL ASSESSMENTS.

	TAX OF 1894.							TAX OF 1895.		
	Amount of assessments.	Number of descriptions.	Amount of annuities.	Number of descriptions.	No. of rebate certificates issued.	Number of refunds made.	Total number of rebates.	Amount of certificates issued.	Amount of refunds made.	Total amount rebated.
Sprinkling	\$104,210.22	34,320	\$5,194.31	1,541	561			\$11,089.73	\$1,529.31	\$13,219.04
Sidewalk	175,627.62	9,604	59,572.75	3,014	3,307			109,484.54	28,603.27	138,087.81
Sidewalk repairs	5,043.03	2,978			41					
Sewers	146,629.26	2,858	27,547.80	293						
Paving	53,786.71	546	23,651.08	106	623			12,336.25	5,726.62	18,062.87
Curb	16,190.92	1,240	2,558.62	45						
Water main	115,389.64	3,563	46,31.38	1,207	463			21,051.28	7,002.56	28,053.84
Re-assessment	7,497.21	439								
Street opening	16,130.92	591								
Change of grade	1,350.00	171								
Sewer and water house connections										
Total	\$642,455.53	56,300	\$164,755.94	6,206	4,995	1,926	6,921	\$154,561.80	\$42,861.76	\$197,423.56
Total cost of making special assessments and maintaining records of same in the city engineer's office, 1895										
Total amount paid county auditor for descriptions and making all entries on county's books, 1895										
Total cost										

\$89,337.93
 151,985.63
 3,754.77
 4,371.60
 37,267.48

 61,197.81
 7,729.80
 1,200.00
 64,170.00

 73.00

 \$431,088.11

488
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 6
 53
 4
 132

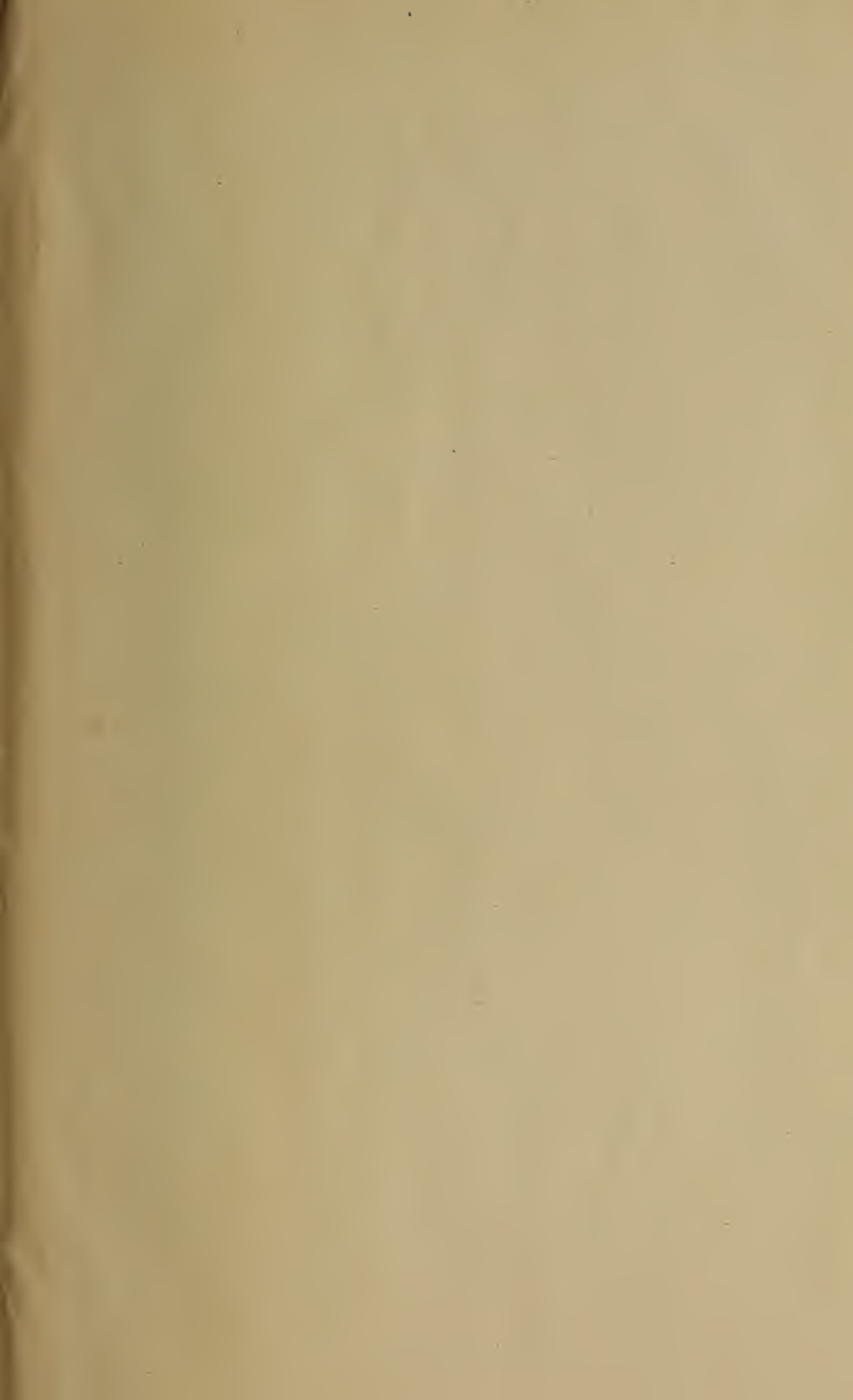
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 29
 4
 11
 15,955

 3

 65,381

\$3,285.25
 4,462.82

 \$7,748.07



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